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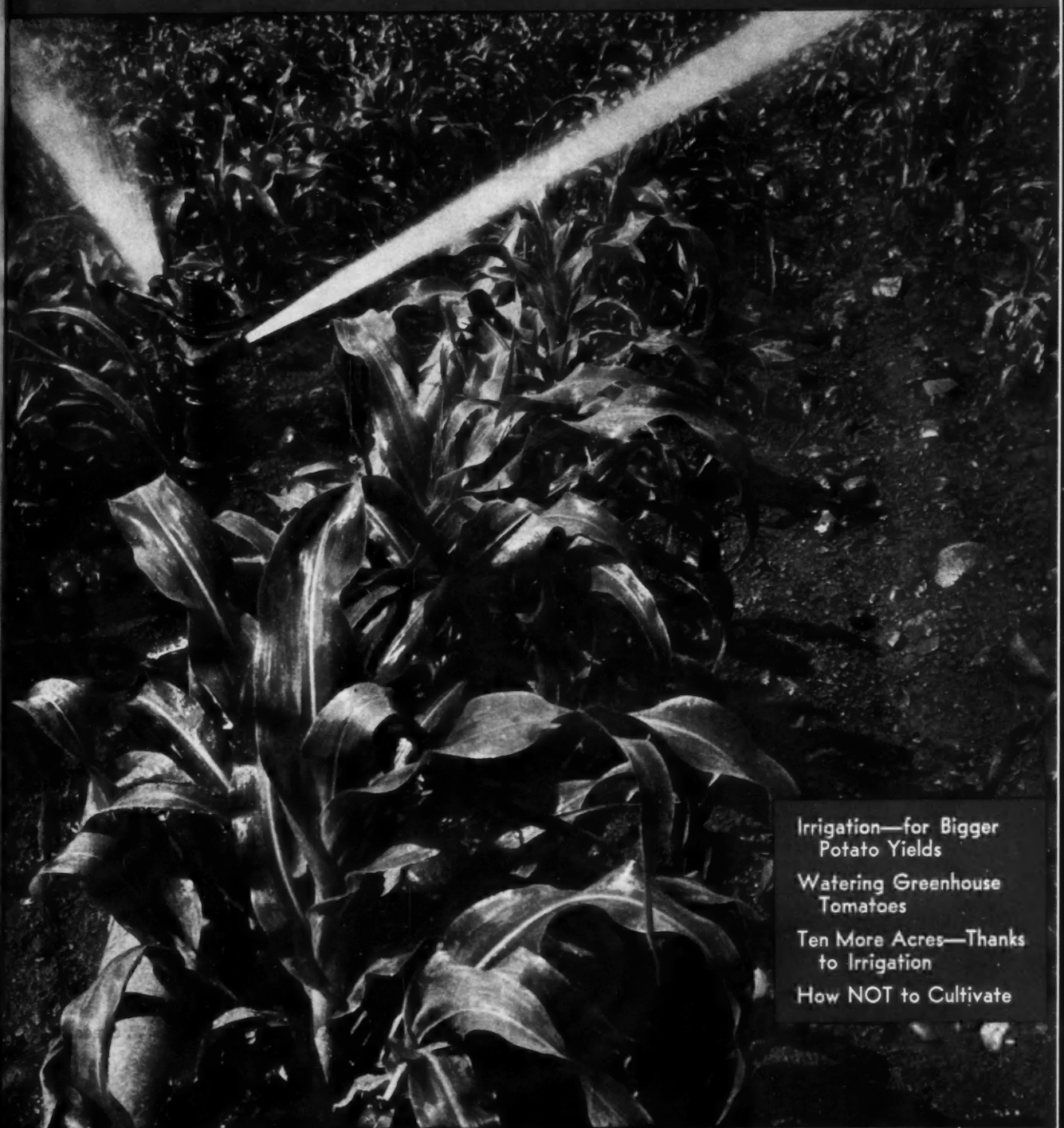
American Vegetable Grower

JUNE • 1957



Irrigation—for Bigger Potato Yields

Watering Greenhouse Tomatoes

Ten More Acres—Thanks to Irrigation

How NOT to Cultivate

IRRIGATION ISSUE

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MEMPHIS, TENNESSEE

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REG. U. S. PAT. OFF.
(Commercial Vegetable Grower)

Vol. 5 June, 1957 No. 6

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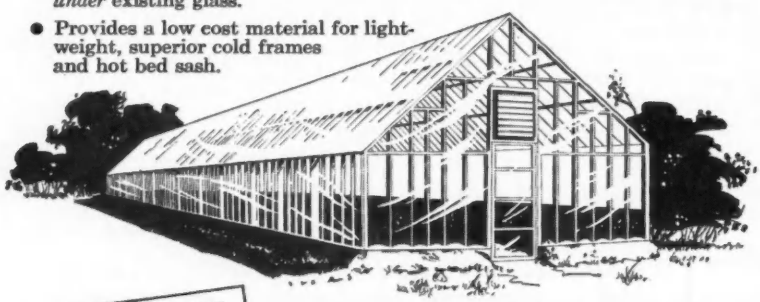

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LETTERS
TO THE EDITOR

Healy's Pride

Dear Editor:

I am sending you a picture of a load of my own muskmelons, Healy's Pride. I have been over 20 years cross breeding and selecting to develop this variety. The 100 melons in this load averaged 18 pounds each with some weighing as high as 28 pounds. They are of fine quality, the taste and netting resembling that of Pride of Wisconsin, one of the parents.

Healy's Pride muskmelons.

Thanks for your good magazine. I get much information from it.

St. Francisville, Ill. E. J. Healy

Comments from Alaska

Dear Editor:

We have problems here you never encounter in the States. The cool, moist weather with over 20 hours of daylight cause all sorts of responses in small fruits and vegetables. No one knows all the answers, and much of the research turns up contradictory answers. Chick-weed and Equisetum are the only serious weed pests. Insects are minor problems. Most diseases are absent on new land so we import most of our trouble in that line.

Homer, Alaska James L. Calkins

Wants to Join

Dear Editor:

We would like to become members of and be placed on the mailing list of the Ohio Vegetable and Potato Growers Association but we don't know the address.

Erie, Mich. Wayne R. Cousino

The address is Room 210, Horticulture Bldg., Ohio State University, Columbus 10, Ohio, and Eugene C. Wittmeyer is secretary.—Ed.

Shipping Tomatoes in the Pink

Dear Editor:

In regard to your March issue concerning the shipping of tomatoes in the pink, I would like to inform you that Louisiana has been shipping tomatoes in the pink now for 50 years, especially the parishes of Orleans, Jefferson, Saint Bernard, and a few others. Now Florida has just started shipping tomatoes in the pink and they get a big write-up about it!

Chalmette, La. Frank Mumphrey

Possibly one reason is that until recently most of Louisiana's tomato production did not go out-of-state and was absorbed by the New Orleans' market. Now that Louisiana is extending its marketing area, reader Mumphrey may be sure we'll keep our editorial eye on Louisiana tomatoes.—Ed.

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TABLE GROWER

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Kill foliage and fruit pests with

aldrin • dieldrin • endrin

WHEREVER vegetable and fruit crops are grown, aldrin, dieldrin and endrin are widely used for effective foliage and fruit pest control. These three powerful insecticides control such major foliage and fruit pests as cabbage loopers, onion thrips, cutworms, armyworms, grasshoppers, plum curculio, potato flea beetles, Colorado potato beetles, and many others. Used at the first sign of infestation, aldrin, dieldrin or endrin knocks out foliage pests *before* they cause serious damage.

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Build up even bigger vegetable and fruit profits this season. Use aldrin, dieldrin or endrin at the first sign of infestation. Aldrin, dieldrin and endrin are available under well-known brand names from your insecticide dealer. *Complete information on these powerful insecticides is available. Write to:*

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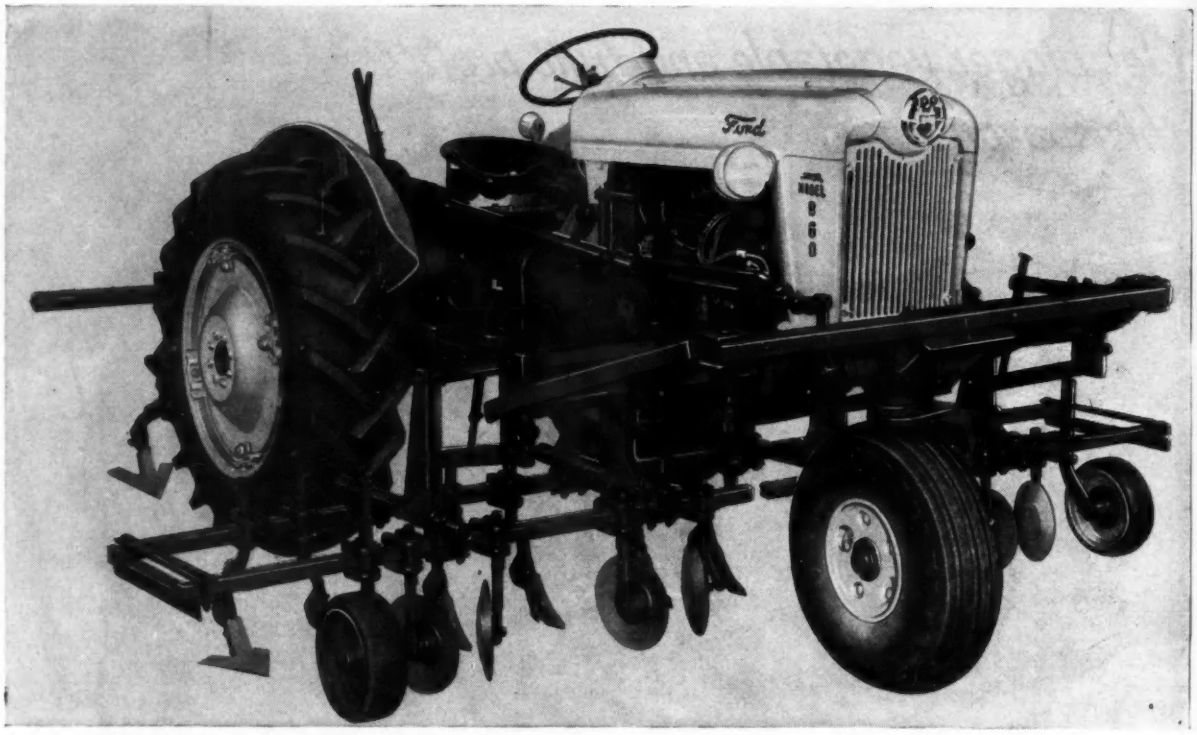

TOPS IN VEGETABLE CROPS!

FORD SINGLE FRONT WHEEL MODEL TRACTORS

Note the improved C-type mounting of the front wheel. This reduces clogging and provides for easier tire changing. But that's not all.

All Ford row crop tractors are equipped with power steering as standard equipment—you don't pay a cent extra. You'll especially appreciate power steering when cultivating—gives you better steering control at all speeds without fatigue.

FORD WIDE ADJUSTABLE FRONT AXLE MODELS

These Ford row-crop models also have power steering as standard equipment.

There are many more advanced features in new Ford tractors, such as Ford's powerful "Red Tiger" engines, live-action hydraulic system and 3-point linkage, Proof-Meter, weatherproof ignition, full-flow oil filter, safety starter switch and sure-action brakes—just to mention a few. See them!

FORD VEGETABLE CULTIVATOR

The new front-mounted Ford vegetable cultivator is designed especially for vegetable growing areas. It gives excellent coverage with any row spacing from a minimum of eight 10" rows to a maximum of six 22" rows or four 34" rows. It can be used with any planting method—flat, bed or furrow. And it also has the built-in versatility demanded by most varying crop shapes—short, slender or bushy.

The front gangs can be individually adjusted from the tractor seat by handy lever control. Regardless of cultivating depth, the cultivator rises to full height for transport. The cultivator can be quickly attached or removed from the tractor, and it is hydraulically controlled. Its clean design gives excellent row visibility. A wide choice of shanks, sweeps, shovels, weeding discs and knives is available, as well as crop shields, gauge wheels and large-capacity fertilizer attachments.

Remember, convenient terms are available on all Ford tractors and implements through your Ford Tractor and Implement dealer. So stop in talk it over!

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IRRIGATION for BIGGER Potato Yields

In dry years yields doubled with irrigation and even in wet years they showed an increase

By ARTHUR J. PRATT
Cornell University

EVERY year since irrigation experiments were first started in upstate New York in 1948, potatoes have given a profitable response to the added water in one or more test plots. In wet years the increases have been only 50 to 100 bushels (30 to 60 sacks), but in some of the driest years the crop has been doubled by irrigation.

Similar results have been found throughout the so-called "humid East" and the Midwest. In most of the potato areas of the West a profitable crop would not be possible without irrigation.

It seldom pays to irrigate a poor crop of potatoes or anything else. A grower must start with disease-free seed, space it closely in the row, and plant on time, which is usually earlier than the average. He must use adequate fertilizer and control all weeds, insects, and diseases. Only when he is prepared to do all of these things well is he prepared to irrigate.

Irrigation methods and frequency also are important. Studies conducted at Cornell at two different locations over a two-year period emphasize that point. Water was applied at three different frequencies depending on the dryness of the soil at the time, as shown in the following table:

	Crop irrigated as soon as moisture level dropped to 50% of available	25% of available	5% of available	Not irrigated
Yield of potatoes in bushels per acre	713	613	581	513

The natural rainfall during the three-month period from plant emergence until harvest averaged .74 inch per week. During this period the plots that were kept above the 50% level received a total of 9 inches of irrigation water. The plots that were allowed to dry to 25% available moisture received a season total of 6 inches of irrigation water, and the plots that were allowed to dry down to 5% available moisture received a little less than 5 inches.

Plots that were kept above the 50% level of available moisture returned 200 bushels for 9 inches of water, the 25% plots returned 100 bushels for 6 inches, and the 5% plots returned 68 bushels for 5 inches. Thus it can be seen that under those conditions and in those years, the important thing was whether the job was done properly or not, rather than whether some irrigation was used as compared with none. The extra potatoes from the best irrigation job were the cheapest ones to grow.

Quality tests on irrigated and non-irrigated potatoes have shown that there is essentially no difference between the two. If there is a drought early in the season, irrigation will result in earlier maturity and generally better quality. However, if the drought comes only near the end of the season, irrigation may delay maturity and result in slightly poorer quality, expressed in terms of specific gravity.

A man with many years of irrigation experience said to me that the most important factor in making irrigation pay is "what the grower has between his ears." In other words, it is a very important management problem. The crop must be good otherwise and must be irrigated when the water is needed and not the next day. Putting the job off one day each of three or four times during the season may be the difference between profitable and unprofitable irrigation.

Irrigation requires good management, but it makes good management possible. THE END.

What size sprinkler should you use? There is no "best" size, but it is well to remember that giant sprinklers such as this one require very high pressures. This results in a high fuel consumption per inch of water applied. Also, wind will distort the distribution pattern of giant sprinklers much more than that of smaller ones.

Don't send a boy to do a man's job! Be sure that your water supply and pump are adequate for the job. The pump above is a Gorman-Rupp model with large-capacity, drum-type fuel tank.

Wexler
Irrigating Contender snap beans in Connecticut.

Ten More ACRES.. *Thanks to* IRRIGATION!

A new farm pond made 10 more acres of cropland available for these New England vegetable growers

By CHARLES L. STRATTON

ROOT crops are the specialty of the Dargoonian Brothers, Benjamin and Garabed (Red), of Andover, Mass. Irrigation plays an important part in their program, and a new 2½ to 3-million gallon farm pond has made available 10 more acres of cropland.

Last May, with the aid of the Soil Conservation Service, the Dargoonians dug out a small waterhole to form a new 120 x 600-foot pond 10 feet deep on the edge of a wooded area. The pond cost $4000. It is equipped with a 12-inch drainpipe for ordinary overflow and has a heavy sod spillway for hurricane use.

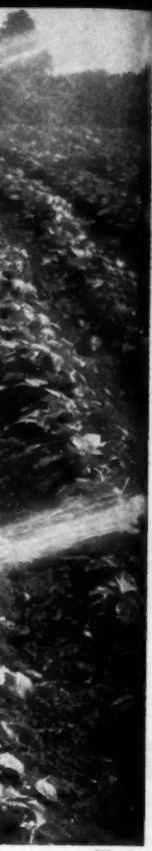
Using a bulldozer, they then cleared 10 acres of woodland. They harrowed the land half a dozen times (no plowing was done), then added 3 tons of lime and a ton of 8-16-16 per acre. They made three nitrate of soda applications.

By June 1 the newly-cleared land was ready for planting to yellow-resistant Danish cabbage. The crop was cultivated a couple of times and large weeds were pulled by hand. Twigs were the biggest problem.

Nearly a mile of Alcoa aluminum pipe is used by the Dargoonian Brothers. They use a 500 gpm Hale pump, a 5-inch main, and 3-inch laterals with 10-gpm Rainbird No. 40 sprinkler heads. They figure on sixty 10-gpm heads operating off three lines. The pump shuts off automatically at the end of a two-hour period.

A new type of jointless coupling (manufactured by Larchmont Engineering Corp., Lexington, Mass.) is used on the main line. The line valves are lined up with the T's, the valve base is turned to lock, and the valve is pressed to open. These reversible line valves can be turned at any angle and can be turned and used on the opposite side. The Dargoonians find that this system is

(*Continued on page* 18)



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Cabbage field at edge of Dargoonian Brothers' new pond, formerly part of woodland at rear.

Benjamin Dargoonian shows first crop of yellows-resistant Danish cabbage grown in newly-cleared field. Trees were bulldozed in May, transplants set out June 1, and photo taken in mid-August.

Benjamin opens up new line valve. Reversible line valves may be turned from one side to the other on the main line for connecting laterals.

Puerto Rican workers on Dargoonian farm move half a dozen lengths of aluminum pipe at one time. This system of moving pipe is quick and avoids getting dirt in the lines.

Improper Cultivation Can Cut Your Yields!

Cultivating the wrong way does more harm than good; it pays to learn the right way to cultivate your crops

By E. C. WITTMEYER
Ohio State University

THE typical vegetable grower spends much money on land preparation, seeds, fertilizers, and planting. Then, when it comes to cultivation, he may make some errors that will cost him a sizable reduction in yield.

Paul Korn, vice-president of St. Mary's Foods, Inc., at Delphos, Ohio, says that many growers reduce their tomato yields almost every year by improper cultivation. More attention to this detail will really pay off, both in increased yields and improved quality, he emphasizes.

The primary objective in cultivating vegetables and potatoes is weed control. Some years ago Dr. H. C. Thompson, professor emeritus at Cornell University, did some research on the comparative value of cultivating to maintain a soil mulch and merely scraping the soil to control weeds. He grew beets, carrots, onions, cabbage, celery, and tomatoes on a sandy, gravelly loam soil.

The only crop which responded to cultivation for maintenance of a soil mulch was celery. The experiment showed that the principal advantage of cultivation was weed control, and very little could be expected from maintenance of a soil mulch.

On some soils cultivation may be needed to close soil cracks or to reduce surface runoff of water. Possibly another advantage on some soils would be conservation of moisture by slowing up the movement of moisture to the surface. On the other hand, moisture loss in some soils will be increased by cultivation because more of the soil area is exposed.

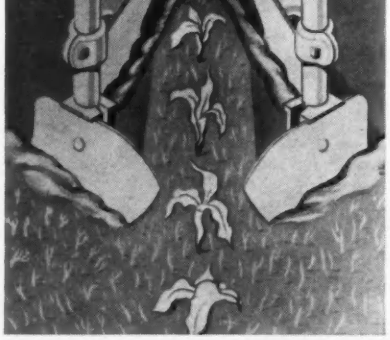
Research work in Ohio with field crops has shown that shallow cultivation which breaks up the crust on the surface increases water intake by more than 10% and thereby reduces erosion. The beating action of raindrops seals many soils, especially silt loams, silty clay loams, and similar types.

This is where organic matter comes into the picture. By maintaining the soil organic matter through the use

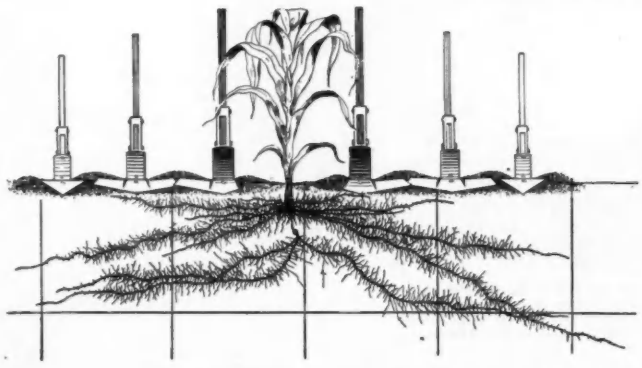
(*Continued on page* 35)

Many vegetable growers have tractors for cultivation only. This means a job well-done on time and when soil conditions are best for the job.

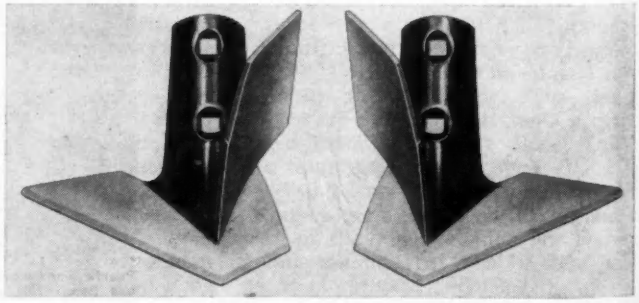
A rod arrangement available from some companies to level cultivated areas between rows. Soil will dry out more where small ridges are left.



Weed-Controlors made by Marlex Mfg. Co., Caro, Mich., have front shoes to smooth and level ground and rear shoes, working slightly deeper in same path, to mulch soil around plant, smothering weeds without danger to plants.



Left—Cultivating tools made by J. I. Case Co., Racine, Wis., are ideal for shallow-rooted crops.



Right — Row Sweeps made by Lantz Mfg. Co., Valparaiso, Ind., have blade deflector which controls dirt movement for faster cultivation. Reduces root pruning, controls weeds.

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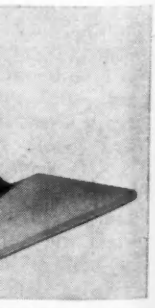
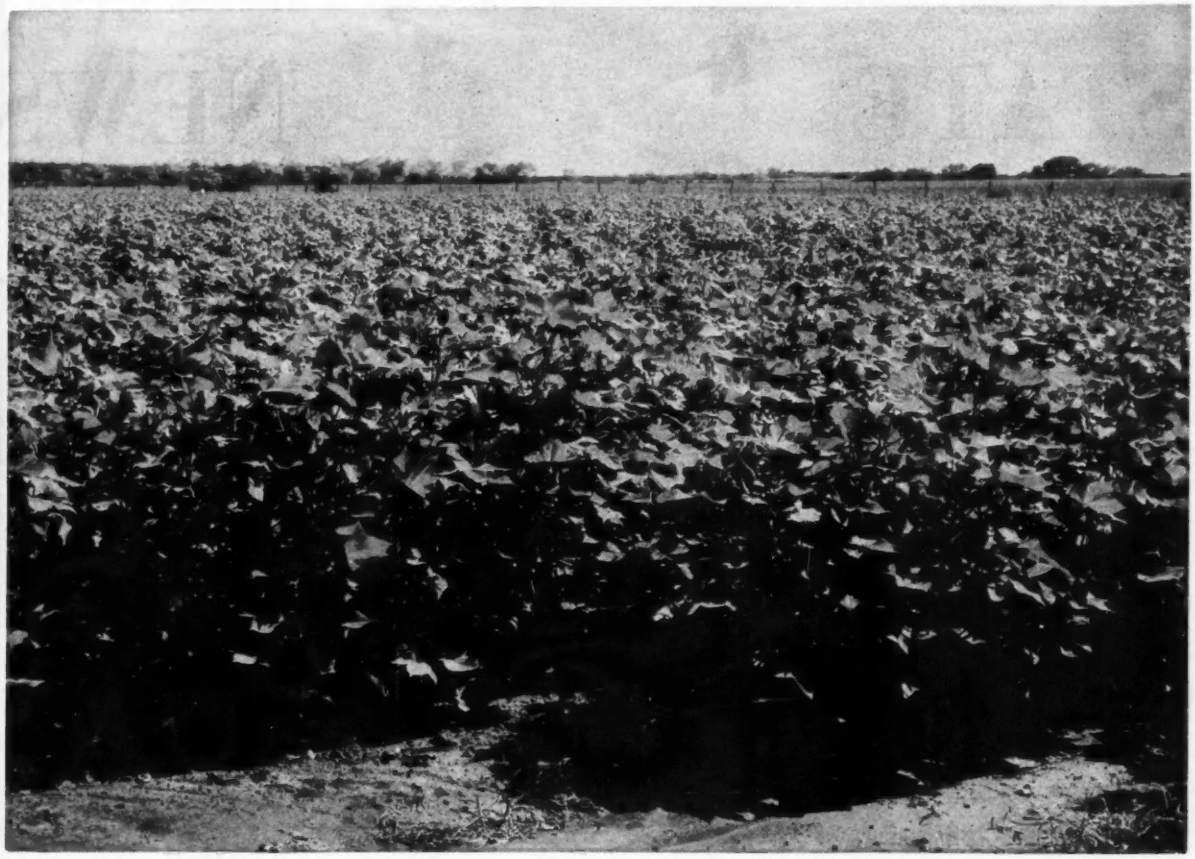
Left—Cultivating tools made by J. I. Case Co., Racine, Wis., are ideal for shallow-rooted crops.



GETABLE GROWER

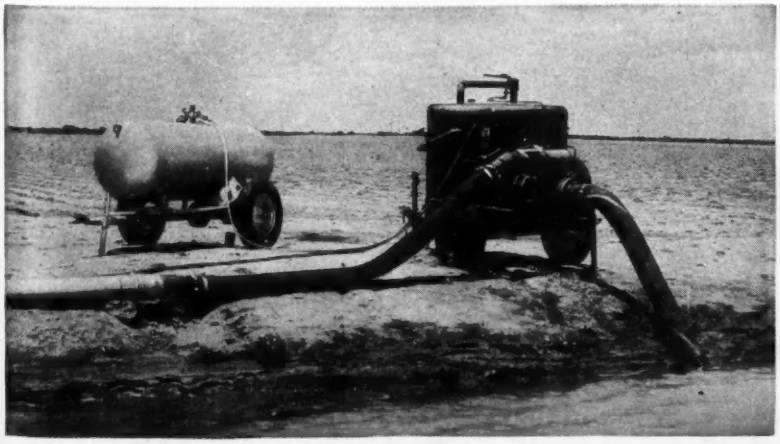


Bumper Crops Without Rainfall!

Two Crops Per Year With Sprinkler Irrigation . . .

ON HIS FARM in Charlotte, Texas, Lawrence M. Finch now gets two bumper crops of peanuts and one cotton crop a year. According to Mr. Finch, rain is a real problem — it rains but two or three times a year. And — many, many previous crops failed, due to a lack of water.

After the installation of sprinkler irrigation by Southern Engine & Pump Co. of San Antonio, Texas, yields were really good! The system uses a deep well pump to fill a pond. From there, a Marlow pump pushes the water (at 55 pounds pressure) through 1,740 feet of 7-inch main, 1,160 feet of 5-inch lateral and 1,160 feet of 4-inch lateral. Water is applied to the fields through 114 sprinkler heads and rainfall is no longer a problem. If you'd like more information on Marlow sprinkler irrigation pumps . . . and how they can help you, write today for the name of your Marlow dealer.



Marlow PUMPS

6-226

DIVISION OF

BELL & GOSSETT CO.

Midland Park, N. J.

Morton Grove, Illinois Longview, Texas

In Canada: Spramotor Sales & Equipment Ltd.
1095-1097 York Street, London, Ontario

STATE NEWS

- **Wisconsin Increasing Snap Bean Plantings for Mechanical Harvesting**
- **Blight Hits Early Tomatoes in Georgia and South Carolina**

Snap Beans and Mechanical Harvesting

WISCONSIN—The acreage of snap beans grown for mechanical harvesting is increasing in this state. Profitable production depends upon good yields of high quality beans. Here are some suggestions on cultural practices that can help make good yields and high quality possible.

1) Use good quality seed having a high percentage of germination. Rough handling of bean seed can injure seed and lower germination.

2) Use a planting rate that gives a uniform and proper plant stand for the soil type and moisture level to be maintained.

The planting rate used should give a final plant stand of three to four plants per foot on sands where a minimum of irrigation will be used, five to six per foot on sands where a high level of irrigation will be used, and seven to eight plants per foot for heavy soils with a good level of fertility and moisture supply.

3) A good level of soil fertility. Good results have been obtained using 500 to 1000 pounds of 10-10-10 per acre on sands to be irrigated. On heavier soils 500 to 700 pounds per acre of 5-20-20 is suggested. Use the heavier amounts indicated when the fertilizer is to be broadcast. A maximum of 300 pounds per acre can be applied in the row at planting. Additional fertilizer should be side-dressed later or applied broadcast.

4) Irrigation is a must, particularly on light sandy soils to obtain the highest profitable yields and best quality.

5) When cultivating, leave the soil as flat as possible along the rows, avoid developing a ridge in the row. Ridging prevents proper use of the harvester and results in a high percentage of missed pods.

6) To help control certain serious bean diseases, avoid replanting of beans on fields used for bean production last season. A good rotation with soil improving crops is necessary not only to help control diseases but to maintain soil organic matter as well. —*John A. Schoenemann, Madison.*

See page 33 for State News Special Report

Tomato Late Blight Threat

SOUTH CAROLINA—Surveys indicate an unusually early and serious infection of tomato plants by late blight in Charleston and nearby coastal counties. The surveys disclose that the disease was brought in from Florida on plants.

Normally plants grown in the Ocala area of Florida are free of this disease, report Dr. W. H. Epps and W. C. Nettles, of Clemson Agricultural College, but because of unusual conditions this season heavy infection has resulted. Many of the plants in South Carolina have come from this area, and it is expected that outbreaks of late blight will be widespread.

POTATO REDUCTION

The Maine Potato Council unanimously endorsed the USDA suggested 7% reduction in Maine potato acreage and has urged growers to abide by it. "Maine tends to dominate the East, the Red River Valley the Midwest, and Idaho the Far West. If potato production in each of these three areas can be kept in near balance with market requirements, national marketing difficulties can be greatly alleviated," reports the council.

The symptom noted is a dead blackened area on the stem about an inch or two below the tip. Other effects of late blight are death of foliage and finally, when fruit infection occurs, a rotting of the fruit. Growers generally are familiar with the foliage and fruit phases of the disease, but they are not familiar with the stem damage.

Control recommendations include dust or spray applications of copper, maneb, or zineb fungicide to which may be added a recommended insecticide.

Irrigate for Top Production

GEORGIA—According to County Agent Harvey Johnson, at Alma, it is possible to produce 1200 dozen ears of corn to the acre by using plenty of irrigation. Grower Darrell Boatright, in the Alma area, who has 11 acres of Golden Bantam corn, is planning to irrigate and expects to get at least 700 dozen ears to the acre and perhaps more.

Tomato crops in Crisp, Worth, and Turner counties were recently found to be infected with tomato blight. State entomological department inspectors from Tifton advised growers to turn under the entire crop on fields where the disease was discovered, and not to plant any more tomatoes in these fields this year to avoid spreading the disease.

Coffee County tomato growers have been cautioned by county agent Larry T. Torrance, of Douglas, to be on the lookout

(*Continued on page 32*)

Destination
DINNER TABLES...'57
Behind each of the more than 250 VINESEED varieties we grow lies thorough research and breeding with but one end in mind. To bring to America's Dinner Tables the finest quality it is possible to grow. Are YOU profiting by using our strains?
INSIST ON ROBINSEEDS FROM YOUR SUPPLIER
Lawrence Robinson & Sons
MODESTO, CALIFORNIA
SPECIALIST VINESEED BREEDERS
CANTALOUPE • CUCUMBER • PUMPKIN • SQUASH • WATERMELON

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ABLE GROWER

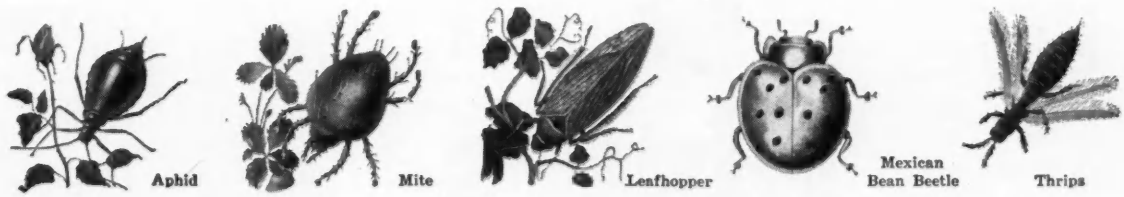
All insecticides should be handled safely ...malathion makes it easy

Ever wear a respirator on a hot July afternoon? It's a "must" when loading or applying most phosphate insecticides – *but not malathion.* Here's why it's "one of the safest insecticides to handle" (USDA)

Though malathion kills 82 insects on 47 crops, it is *low* in toxicity to man and animals. To handle it safely, follow the same simple precautions required for DDT. Respirators, special protective clothing are *not* required.

Avoid residue problems—Malathion's low toxicity to man has given it a *high* residue tolerance. Residues also disappear rapidly. That's why you can spray most crops as close as 72 hours from harvest *without residue problems.* It's the ideal way to control buildups of aphids and other pests close to harvest.

FREE Grower's Guide—Write American Cyanamid Company, Nitrogen and Allied Products Div., Dept. V2, 30 Rockefeller Plaza, New York 20, New York.



Malathion stops them all... plus 77 *other* insects attacking 47 crops!

MALATHION insecticides have many uses on every kind of farm

CYANAMID

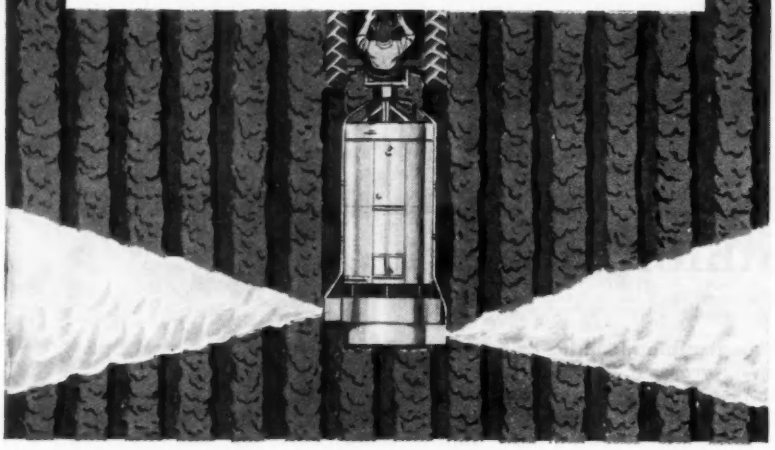
MYERS AIR SPRAYERS

Plenty of Air for Two-Way Coverage

Myers air sprayers deliver the tremendous air volume and velocity required for effective two-way spraying. With a Myers, spray paths can be set up to insure proper spray coverage of both sides of plants. And field experience and experiments prove FOLIAGE MUST BE SPRAYED FROM BOTH SIDES TO INSURE BEST POSSIBLE COVERAGE.

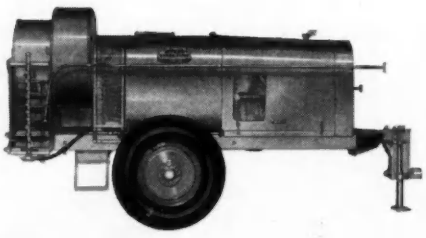
Myers high pressure spray pump and ceramic-nozzle discs combine to produce a spray fog that saturates the high-speed air stream. The result is yield-boosting coverage from leaf tip to ground level.

See your Myers dealer today for a demonstration.



Myers Concentrate Field Crop Sprayer:

Two-way discharge, 22,000 cubic feet of air per minute from each side, 60 MPH. High pressure, abrasive and corrosive resistant 20 GPM Myers piston pump. Positive controls, all within easy reach of the operator.



Myers®

POWER SPRAYERS AND IRRIGATION PUMPS

Myers® The F. E. Myers & Bro. Co. • Ashland, Ohio • Kitchener, Ontario

MAGNESIUM: Yield Booster

Its importance as a fertilizer element is now well established

NEW attention is being focused on the importance of magnesium as a fertilizer element for vegetables. Now recognized as a major plant food, the element is required to help give plants their green color and to keep them growing.

Magnesium deficiencies are prevalent in such widespread areas as New England, Atlantic and Gulf coast states, South, Northwest, and even the corn belt of the Midwest. The important vegetable areas of southern New Jersey had only a few farms with obvious magnesium deficiencies five years ago. But now, magnesium shortages have been identified in soils of approximately 90% of the same farms.

Quick-Acting

Excellent results in overcoming deficiencies and in increasing profitable crop yields have been demonstrated for fertilizers containing quick-acting, water-soluble sulfate of magnesia. Applied to soil in a fertilizer compound or separately, it becomes available for plant use more quickly than limestone material used to correct magnesium deficiency.

Corn, cucumbers, tomatoes, cantaloupes, and potatoes have responded favorably to fertilizers containing sulfate of magnesia. The Massachusetts Agricultural Experiment Station reported that potato yields increased 33%, 19%, and 20%, and carrot yields, 26%, from the addition of 200 pounds of sulfate of potash-magnesia per acre to a 5-10-10 fertilizer.

Three years of field tests by Dr. Ora Smith, of Cornell University, showed that soluble magnesium gave

(*Continued on page* 18)

Magnesium-deficient bean leaves show characteristic yellowing, mottling, and browning.

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How many tomatoes can a vine hold?

...use **DITHANE M-22**

After using DITHANE M-22 (maneb) for disease control, a lot of growers remark how the vines look so crowded with big, choice tomatoes. No one has yet counted the exact number per acre, but experiment stations have measured up to 15% higher yield with DITHANE M-22 than with other types of fungicides. DITHANE M-22 results in maximum yields because it gives maximum protection from anthracnose, early blight and late blight, gray leaf spot and Septoria leaf spot. With this manganese-containing fungicide, vines also develop a greener and more luxuriant foliage. Use DITHANE M-22 and see.

RHOTHANE FOR INSECTS

For better tomato insect control, use RHOTHANE *with* DITHANE. RHOTHANE *checks fruitworms, hornworms, pinworms, flea beetles, psyllids, and thrips.*

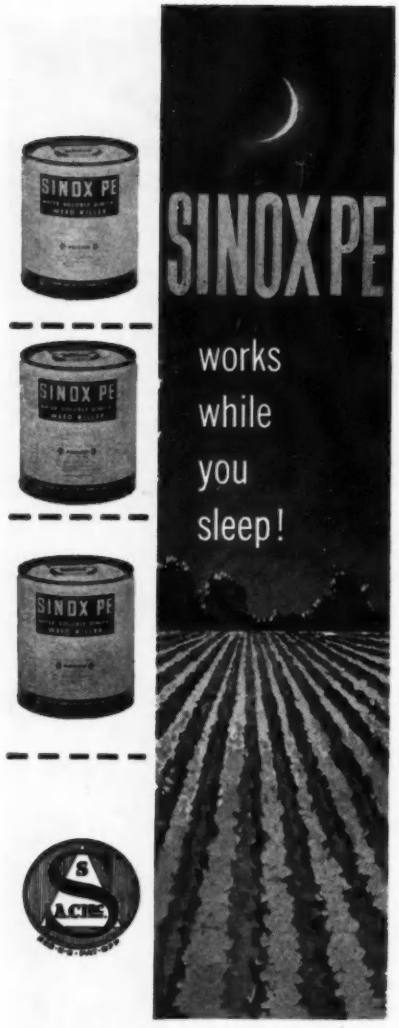
RHOTHANE *and* DITHANE *are trademarks, Reg. U. S. Pat. Off. and in principal foreign countries.*

Chemicals for Agriculture

ROHM & HAAS COMPANY

WASHINGTON SQUARE, PHILADELPHIA 5, PA.

Representatives in principal foreign countries



SINOX PE, in pre-emergence application, is highly selective. It singles out and halts *weed* growth in: BEANS AND SWEET CORN, PEAS AND POTATOES.

SINOX PE "polices" the area, eliminates the destructive weeds and conserves all available plant food elements and moisture for the crop itself.

SINOX PE does a big labor/dollar-saving job for you and works *'round the clock* — not any eight hour shifts! SINOX PE works *while you sleep!* Remember — good weed control is good farm economics . . .

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Agricultural
CHEMICALS INC.

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For YOUR **IRRIGATION** Pumping Units

Insist on **HALE**

For: Increased Profits
Larger Quantities
Better Quality

BECAUSE: Hale Irrigation Pumping Units are

- **Efficient; Sturdy; Dependable**
- **Compact and Flexible in Performance**
- **SOLD thru Distributors who are well qualified to Engineer a System best suited to YOUR Needs.**

- **Write today to Dept. AVG for full information. Prompt Reply.**

Name.....

Address.....

Water Source..... No. Acres.....

• **IRRIGATION DIVISION** **HALE** **FIRE PUMP COMPANY**
Conshohocken, Pa.

MAGNESIUM

(*Continued from page* 16)

profitable increases in yields of U.S. No. 1 potatoes. Potatoes fertilized with 1200 pounds per acre of 5-10-10, in which half the potash was derived from muriate of potash and half from soluble sulfate of potash-magnesia, produced as many bushels as from 2400 pounds of 5-10-10, in which the potash came entirely from muriate of potash.

Pea Yields Were Higher

Magnesium is believed to help plants utilize phosphorus. In field tests of peas near Waupun, Wis., parts of fields received fertilizer containing water-soluble magnesium. Analyses of the peas produced showed a consistent increase of magnesium and phosphorus in those that received the water-soluble magnesium. And the yields of peas were greater from the fields receiving the magnesium.

Cannery pea growers use soluble magnesium and potash to increase yields and quality of peas in the Skagit Valley of Washington. Soil tests show that at least one farmer of three in the Northwest can profit from the use of magnesium. THE END.

TEN MORE ACRES

(*Continued from page* 10)

quicker, easier, and avoids dirt in the line.

During a dry season the Dargoonians irrigate daily throughout the day, covering 4 acres at one setting. The pipeline is rotated so that each field gets a good soaking every five days. All crops are irrigated during the day except Iceberg-type lettuce. Benjamin warns growers to wait until evening to irrigate this crop, and not apply water when lettuce heads are hot.

A source of water has been a big problem in the past for these growers. City water, though available and used in large amounts, is not too satisfactory because of the distance to the farm and the resulting low pressure. City water is used in the fields nearest the road, but small pipes and an additional 500 gpm Hale pump must be used. When using city water alone, it takes four hours to do a job that can be done in two hours with their regular irrigation system.

The Dargoonians' season starts with Pennslake lettuce, Hutchinson carrots, No. 10 Hollow Crown parsnips, and Danish cabbage, with some 50 acres under cultivation. All produce is washed, iced, and trucked to Boston. Carrots and parsnips are prepackaged. THE END.

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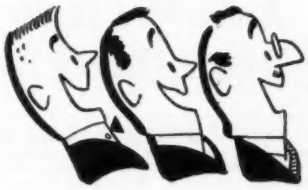

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for GREENHOUSES
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for SILAGE, for MULCHING

WE COVER THE NATION
with top quality, heavy duty
BAKELITE
VINYL
DURATEX COVERS
for STERILIZATION
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4 MIL. SEAMLESS
CLEAR OR BLACK
VINYL COVERS
18", 36", 48", 54", 72" wide

PER SQ. YD. 19½¢ slightly over 2¢ per sq. ft.

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8 MIL. HEAVY DUTY
VINYL COVERS
Tan for Steaming
Green for Fumigation
40," 60," 72" wide
IN ANY DESIRED LENGTH

PER SQ. YD. 43½¢ LESS than 5¢ per sq. ft.

Also in CLEAR VINYL PLASTIC
18", 36", 48", 54", 72" wide
same weight, same price

CUSTOM SIZE COVERS
of above materials, with guaranteed electronically welded seams, additional charge of 14¢ per sq. yd.

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Service charge of $2 is made on all orders for less than 100 sq. yds.

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IMMEDIATE
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All Gauges, All Widths, Available

SIZE	Sq. Ft. Per Roll	QUAN. 2M to 10M sq. ft. PRICE Per Roll	QUAN. 10M to 50M sq. ft. PRICE Per Roll	QUAN. 50M or more sq. ft. PRICE Per Roll
.002"				
4'2" x 200'	833	$ 6.57	$ 5.75	$ 5.11
8'4" x 200'*	1,667	13.22	11.56	10.27
.004"				
3' x 100'	300	4.73	4.14	3.68
4'6" x 100'	450	7.10	6.21	5.75
7' x 100'*	700	10.94	9.66	8.59
10' x 100'*	1,000	15.77	13.80	12.27
10'6" x 100'*	1,050	16.56	14.49	12.88
12' x 100'*	1,200	18.92	16.56	14.72
14' x 100'*	1,400	22.08	19.32	17.18
16' x 100'*†	1,600	25.23	22.08	19.63
16'6" x 100'*	1,650	26.02	22.77	20.25
20' x 100'*†	2,000	31.54	27.60	24.54
.006"				
10' x 100'*	1,000	23.66	20.70	18.40
10'6" x 100'*	1,050	24.84	21.74	19.32
12' x 100'*	1,200	28.39	24.84	22.08
14' x 100'*	1,400	33.12	28.98	25.76
16' x 100'*†	1,600	37.86	33.12	29.44
16'6" x 100'*	1,650	39.04	34.16	30.36
20' x 100'*†	2,000	47.32	41.40	36.80

*—Centerfolded.
†—Also available in black (Sun resistant—where transparency is not a requirement.)
Packaging—All rolls individually wrapped in 70# kraft paper with zip-string for easy opening.

ORDER NOW FOR MULCHING. .0015 gauge
BLACK POLYETHYLENE
36" and 48" wide. 250 ft., 500 ft., 1,000 ft. rolls.

QUANTITY Less than 10 M sq. ft.	QUANTITY Less than 50 M sq. ft.	QUANTITY Over 50 M sq. ft.
$6.39 per M sq. ft.	$5.59 per M sq. ft.	$4.96 per M sq. ft.

Service charge of $2 per roll on orders under 2,000 sq. ft.
ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE

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Boost yields with 45% nitrogen apply Du Pont NuGREEN®

FERTILIZER COMPOUND

—it's concentrated for efficiency

Top-dressed, side-dressed or plowed down, "NuGreen" feeds crops nitrogen as they need it for profitable, season-long growth. "NuGreen" aids decay of plant residues and cover crops, and it resists leaching.

Sprayed on foliage or dissolved in irrigation water, "NuGreen" feeds crops nitrogen through leaves and roots, giving them a growth boost almost instantly. "NuGreen" can be combined with pesticide sprays for even greater application economy.

Uniform distribution by air is easy with Du Pont "NuGreen" because it is concentrated 45% nitrogen in free-flowing shot form . . . gives you more coverage per flight. "NuGreen" won't corrode equipment and saves you labor because you handle less material per unit of nitrogen.

You profit with Du Pont "NuGreen" no matter how it's applied . . . your crops will be fed nitrogen for maximum growth and yields. "NuGreen" comes in 80-lb. bags—order Du Pont "NuGreen" from your supplier today.

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it's concentrated 45% nitrogen

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

Answering Your QUESTIONS

Don't let your questions go unanswered. Whether large or small, send them with a three-cent stamp for early reply to Questions Editor, AMERICAN VEGETABLE GROWER, Willoughby, Ohio.

HAND BUNCHER FOR ASPARAGUS

Where can I buy a hand buncher for asparagus?—*North Carolina.*

Try the Mitchell Seed Co., Market St., Philadelphia, Pa.; Swedesboro Supply Co., Swedesboro, N.J.; and Joseph Auer, Seed Store Manager, Main St., Milltown, N.J. These sources of supply also handle the fish tail knives for cutting the grass.

TOMATOES IN PLASTIC GREENHOUSE

I would like some information on how to grow tomatoes in a plastic greenhouse. Can you help me?—*Massachusetts.*

Send for Leaflet 169, "Growing Tomatoes in Plastic Greenhouses," by E. M. Emmert. It is available from the Bulletin Office, University of Kentucky, Lexington, Ky.

WANTS SORBIC ACID WAX

Please advise where the sorbic acid wax discussed in Fred Heiligman's article ("New Wax Cuts Losses," Jan., 1957) can be obtained in commercial quantity.—*Florida.*

From S. C. Johnson & Son, Inc., Agricultural Waxes, Racine, Wis.

JERUSALEM ARTICHOKES

We are looking for a source of supply of 2000 to 5000 pounds of Jerusalem artichokes. Can you help us?—*Quebec.*

Try Gill Bros. Seed Co., Montavilla Sta., Portland 16, Ore.

PLANT PROTECTORS

Can you give me the address of the USCO Waxed Kraft Paper Co. which manufactures the paper for plant protectors used by Logan Colp of Metzler Orchards ("Grow Your Own Hardy Plants," by Eldon Banta, March, 1956).—*Illinois.*

USCO Waxed Kraft Paper is sold by the Union Selling Co., Mill Agents, Enquirer Bldg., 617 Vine St., Cincinnati 2, Ohio. Logan Colp, Metzler Orchard Co., Cobden, Ill. advises that he has a few thousand covers made up that he will sell at $6.00 a hundred f.o.b. Cobden, Ill.

TERRAPIN TROUBLE

I have been having a lot of trouble with land turtles or terrapins which get into my unstaked tomato acreage and eat quite a few. What is the best way to get rid of them?—*Oklahoma.*

Terrapins are quite a problem in Oklahoma especially in tomato plantings since they seem to prize tomatoes as food. According to E. L. Whitehead, extension horticulture specialist at Oklahoma A. & M., tomatoes should be staked and pruned to avoid damage from the turtles even though it means additional expense and labor. Some growers have found it practical to use barriers made of a sheet of metal or aluminum set on the edge and extending around the planting. It is also suggested that the terrapins be trapped at night to reduce the number of pests.

STINKBUG CONTROL

My tomatoes have white spots showing under the skin which spoils their appearance. What is this and what can I do about it?—*Illinois.*

Stinkbugs are causing the damage. You may not see any "bugs" on your tomatoes but only a few of these insects are necessary to cause extensive spotting of fruit.

Growers using the Illinois spray schedule for tomatoes and applying DDT or TDE have little or no trouble with stinkbugs. Malathion at the rate of 1½ tablespoonsful per 5 gallons of water can also be used but it should not be applied less than three days before harvest.

ANHYDROUS AMMONIA

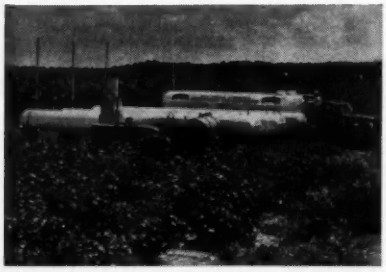
Its use as a nitrogen fertilizer is gaining; here are some reasons

By **CHESLEY HINES**
Mississippi State College

THE extent to which anhydrous ammonia is now being used as nitrogen fertilizer in all sections of the United States and in many other countries is phenomenal.

The annual increase in the production and use of anhydrous ammonia since 1948 has been even more pronounced than the yearly increase in the total amount of fertilizer nitrogen used. The use of fertilizer nitrogen in the United States rose from 841,000 tons in 1948 to 1,847,000 tons in 1954, while that part of the total tonnage of nitrogen used as anhydrous ammonia increased from 35,566 tons in 1948 (the first year that it was commercially available in volume) to 287,389 tons of nitrogen in 1954.

As a result of the successful experimental work by Dr. W. B. Andrews, of the Mississippi Experiment Station, a pioneer investigator and authority on anhydrous ammonia, 45,068 tons of anhydrous ammonia were used by Mississippi farmers in the fiscal year, 1955-56. Another result



Mississippi Chemical Corporation tank truck fills farmer's storage tanks. Tractor is equipped with applicator which injects the gas into the soil.

was the organization of the farmer-owned Mississippi Chemical Corporation, which in 1955 produced 96,088 tons of anhydrous ammonia, of which approximately 40,000 tons were distributed as such, and 143,152 tons as ammonium nitrate.

When applied to the soil, anhydrous ammonia is held by the clay and organic matter, affecting only about 5% of the volume of the surface 6 inches at a rate of 100 pounds of actual nitrogen per acre on average soil, and with a coverage of about 10% of the surface area. These figures vary to some extent with soil texture and organic matter.

In the zone of application, anhy-

(*Continued on page 22*)

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With the *right* Fairbanks-Morse irrigation pump on the job, you'll save on power, on repairs and maintenance, on lubrication and attendance—which means low pumping costs season after season.

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ARAMITE

There's more money for you from better crops. A small per-acre investment in Aramite can make a big dollar difference. Year after year, field results nationwide prove the bigger and better yields you can expect with Aramite—the safest, best-known mite-killer today.

Aramite gives outstanding control of most mite species including Two-Spotted, Atlantic, and European Mites. Equally effective on melons, citrus, corn, tomatoes, apples, peaches, and ornamentals. It is compatible with most insect and fungus-killing chemicals, has longer residual activity and is non-hazardous to humans and animals.

For more than 19 fruit and vegetable non-fodder crops, including lima beans, the Miller Amendment (Public Law 518) has approved Aramite with a tolerance established of one part in a million.

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producers of seed protectants, fungicides, miticides, insecticides, growth retardants, herbicides: Spergon, Phygon, Aramite, Synklor, MH, Alanap, Duraset.

ANHYDROUS AMMONIA

(*Continued from page* 21)

drous ammonia greatly reduces such fungi and nematodes as may be present, suggesting a possible supplemental value as a fungicide and nematocide.

For three days after application, anhydrous ammonia reduces the number of bacteria and actinomycetes present, after which they increase rapidly—up to 6 to 25 times as many bacteria 10 days later. All soil insects are doubtless killed in the zone of application, but because of the small area of soil affected by the anhydrous ammonia and the capacity of these insects to reproduce and move in the soil, any beneficial effect is only temporary.

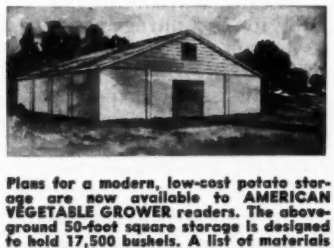
Rate of Nitrification

Nitrogen applied in the ammonium form does not leach before it is converted into nitrate nitrogen, which may take less than three weeks under favorable conditions for nitrification. Differences in the leaching of nitrogen applied in the nitrate compared to the ammonium form may be of importance only on strongly acid soils or when applied close to the time of use by the crop on soils with a fair supply of lime.

The highest efficiency is obtained from anhydrous ammonia or any other source of nitrogen when applied as close as practicable to the time that it will supply the form of nitrogen needed by the particular growing crop. According to Dr. Andrews, corn, cotton and probably sugar cane, sorghum, and most other plants prefer the ammonium form of nitrogen when young. Corn may utilize it equally as well as nitrate nitrogen as late as the application may be made with conventional equipment.

At the normal side-dressing or top-dressing time, oats, probably other small grains, and most truck crops probably have a strong preference for nitrate nitrogen at this stage of

BUILD A POTATO STORAGE



Plans for a modern, low-cost potato storage are now available to AMERICAN VEGETABLE GROWER readers. The above-ground 50-foot square storage is designed to hold 17,500 bushels. A list of materials is included with the plans. Send remittance of $1.50 in form of check or money order to AMERICAN VEGETABLE GROWER, Willoughby, Ohio.

growth. On quick-growing and short-season vegetable crops such as cabbage, on which nitrate nitrogen is customarily applied as side-dressing, anhydrous ammonia should be applied three to four weeks earlier in order that it will be converted over to nitrate form by the normal nitrate side-dressing stage of growth.

Results on Vegetable Crops

In Mississippi, the results of experimental tests on cabbage, green beans, tomatoes, sweetpotatoes, and spinach indicate that excellent results can be expected from anhydrous ammonia as the source of nitrogen when applied at the proper time, rate, depth, and method. Very satisfactory results have been obtained from growers' use of anhydrous ammonia on limited acreages of spinach, cabbage, lettuce, turnips, and pimento pepper in Mississippi.

A number of tests have been conducted with anhydrous ammonia on various vegetable crops in several other states. In most cases, anhydrous ammonia has compared favorably with other sources of nitrogen. However, in a few cases where it was applied as a side-dressing to cabbage, results have been less favorable than those obtained from ammonium nitrate. The difference is attributed to the need for nitrate nitrogen at side-dressing time, which can be corrected by earlier application of anhydrous ammonia.

Growers interested in anhydrous ammonia should contact their state experiment station, county extension agent, or extension vegetable specialist for the latest information and recommendations. THE END.

ONE WAY TO BEAT NEMATODES

Oklahoma sweetpotato growers are finding that the new nematode-resistant variety, Nemagold, is one of their best weapons against nematodes. Fred Ellers (above) compares yields from three varieties planted in adjoining rows on his Woodward County farm. The Nemagolds lying in the row showed no nematode damage, while the varieties he is holding—Allgold and Redgold—were severely damaged. All three varieties, developed by Dr. H. B. Cordner of Oklahoma A & M College, are high-vitamin types. Evaluating the three after two years' production under irrigation in the Mooreland area, Dr. Cordner reports, "Nemagold appears best on the basis of nematode resistance, yield, quality, and market preference."—Lee Stevens.

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in Power for Vegetable Growing

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POWER? The Model B delivers full 2-plow power to handle the most demanding jobs in your operation. Battery ignition system assures steady engine power at all speeds.

CONVENIENCE? The Model B — long known for easy handling — now offers the added timesaving convenience of SNAP-COUPLER hitch. The new 2-bottom plow, 2-row bedder, 2-row drill planter, and field cultivators are all mounted tools, attached minute-quick with SNAP-COUPLER hitch.

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ECONOMY? You can own the Model B for a price you can't match anywhere. Low operating cost and long life . . . along with its many timesaving features . . . make the Model B an unsurpassed tractor value for vegetable growers.

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Model B with new 2-bottom plow. Hydraulically lifted and lowered. SNAP-COUPLER hitch.

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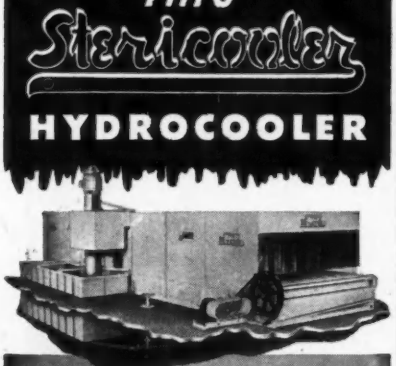

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Developing STRONG ROOT SYSTEMS

Here are ways that the grower can help his vegetable crops develop strong root systems

By S. W. BECKER
Germain's, Inc.

THE profitable production of any crop is becoming more and more a study of details, aimed at encouraging maximum plant development at all times. We hear much about how and when to fertilize, how and when to water, how to control insects, and how to prevent disease.

Seldom do we hear of the importance of developing a strong root system or how the root system of one crop differs from that of another. It is as important that the roots develop to their maximum without interference as it is to prevent insects from eating the leaves from the plant. Man can easily be the crop's worst enemy by unknowingly pruning the roots while cultivating or while side-dressing with fertilizers.

The root systems of vegetable crops differ greatly in habit, development, area covered, and depth of penetration. Thus, all crops cannot be treated alike for best results. A knowledge of the root development of the vegetable crop being grown will help the grower protect the crop while cultivating and also to apply fertilizer and water most effectively.

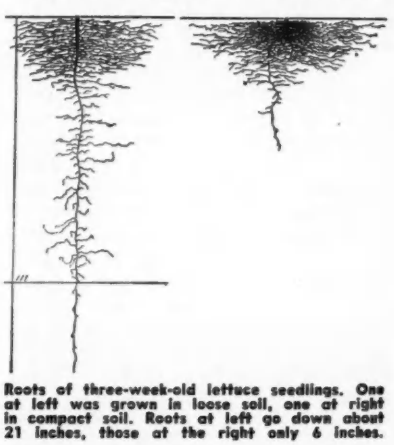
Roots develop better in fertile soil than in poor soil. Studies in Iowa with corn show that on well conditioned fertile soil roots utilized water from a depth of 7 feet compared to only 2 or 3 feet for plants growing in unfertilized soil.

Also, crops growing on a fertile soil can use water much more effectively. Studies in Missouri show that it required 5600 gallons of water to produce a bushel of corn on a well conditioned, fertile soil as compared to 21,000 gallons on unfertilized soils. Plants cannot make maximum use of the fertilizer and water without a strong root system.

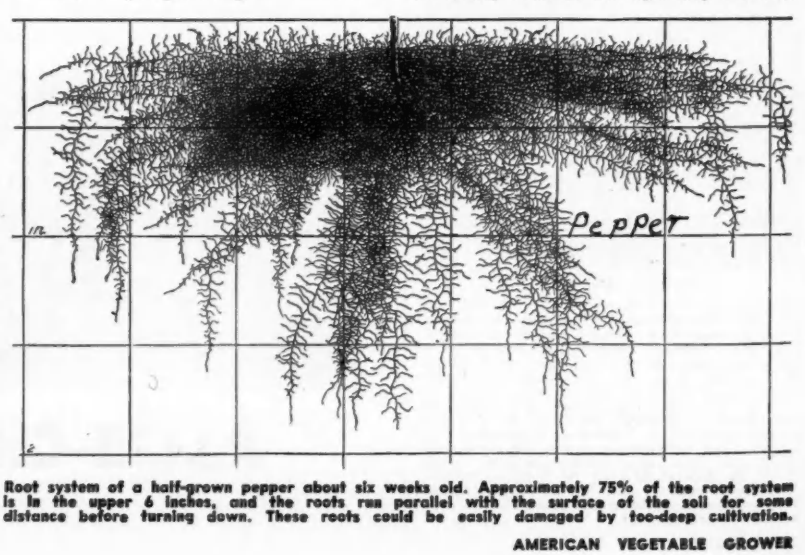
Soil Conditioning

The grower can do several things to develop a strong root system. A deep-rooted lettuce plant needs a more deeply prepared soil than does a shallow-rooted pepper plant. When the root system is confined or greatly limited as to area, much greater skill is required to produce a profitable crop. Thus, a soil must be well conditioned for the crop to be grown.

Roots need air as well as moisture



Roots of three-week-old lettuce seedlings. One at left was grown in loose soil, one at right in compact soil. Roots at left go down about 21 inches, those at the right only 6 inches.

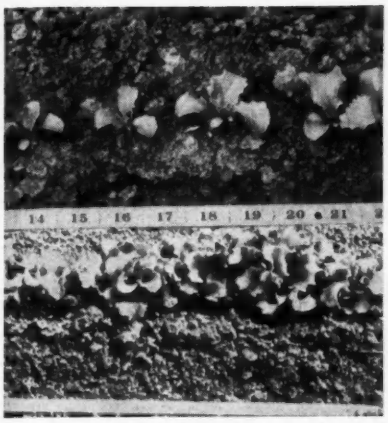


Root system of a half-grown pepper about six weeks old. Approximately 75% of the root system is in the upper 6 inches, and the roots run parallel with the surface of the soil for some distance before turning down. These roots could be easily damaged by too-deep cultivation.

and food nutrients. Therefore, conditioning often means more than preventing or correcting a hardpan condition. Soils that cement together when watered frequently limit root development by the exclusion of air.

Precision Planting

The grower must protect the roots at all times to encourage maximum development. In the past it has not been possible to plant small, irregular



Filcoated lettuce seed planted 2 inches apart (above) and uncoated seed planted the normal way (below). Thinning to stand can damage root systems which develop early in lettuce plants.

seeds such as lettuce, onion, and carrot, with precision. How to plant vegetable crops for stand has long been a problem, but it has most often been considered as a means of reducing costs rather than of producing a strong root system.

With Filcoated seed, precision planting is no longer a major problem. By this process any of the irregular vegetable seeds can be made into a round ball with a diameter of the length of the seed or to any larger size as desired.

Filcoated seed can be spaced as desired. Growers like to plant to assure a stand, so they space Filcoat lettuce seed 2 to 4 inches apart until they learn a better method. Sometimes growers use 2 pounds of lettuce seed per acre and again, under much more ideal conditions, as little as ½ pound. However, when a thick stand is obtained, the damage done to the root system, while thinning to stand, must be severe as compared to the Filcoat precision-planted crop.

Planting to stand may be even more important for crops like carrot and onion which are not normally thinned, for competition between plants, roots, and tops determines plant development and how the harvested crop will grade. When Filcoated carrot seed is used, a more uniform stand is obtained. Some growers use 6 to 8 rows per bed instead of the usual two, making possible harvesting of maximum top quality yields. THE END.

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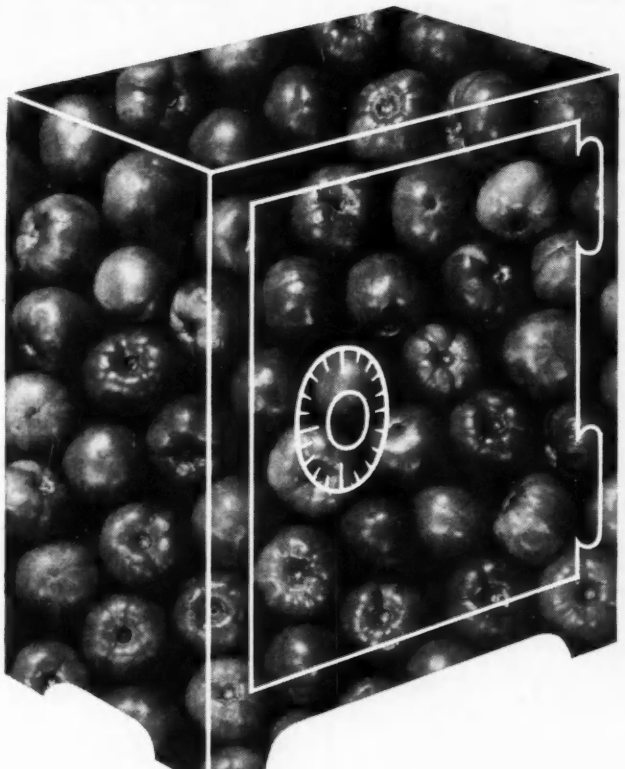
with JOHNSON'S WAX for vegetables and fruits!



Treated with Johnson's Wax, shining red tomatoes are a treat for store eyes. They flag down shoppers with the shine that sells, even at premium prices. In addition to increasing sales, Johnson's prevents shrinkage, lengthens store life, and reduces losses from spoilage.

Inexpensive and easy to apply, Johnson's Wax helps the tomato business . . . jobbers, shippers, packers and producers. Use Johnson's on the new crop this season. You'll like the results.

Many other fruits and vegetables gain added eye and sales appeal from Johnson's Wax. For full information, contact your local distributor, or write: S. C. Johnson & Son, Inc., Agricultural Waxes, Dept. AVG-67, Racine, Wisconsin.

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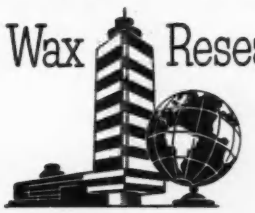

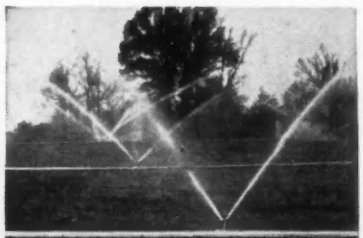

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NEW LANTZ SWEEPS COVER WEEDS *IN THE ROW*

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Willard Elliott grew these Fairfax melons after a rye cover crop. He planted 3½ x 7 feet and fertilized three times: the first, after the plants were up; the second, after the runners were well started; and the third, a nitrogen application, at the last working.

Grow *Twice as Many* Melons per Acre!

One acre does the work of two for these Maryland watermelon growers who plant 1700 hills per acre

By OTIS S. TWILLEY

MELON growers in Wicomico County, Maryland, are making one acre do the work of two in watermelon production.

These growers use cover crops, closer planting, and increased fertilizer applications with clean cultivation to make yields that surprise their neighbors. They plant more than 1700 hills per acre, or approximately twice the number planted by most growers.

Extra-Large Melons

John Tindle harvested over 1500 extra-large Congo melons per acre, with practically no culls or small melons. He planted 3½ x 7 feet after soybeans. He made three fertilizer applications, a total of 1200 pounds per acre; the first, an 8-8-8, and the second and third, a 5-10-10 formulation. The first was applied after the plants were up, and the third at the last cultivation.

"I have always had excellent results with this method," says Tindle. "If a farmer has limited acreage, he can grow almost as many melons on one acre as on two by the wider customary spacing. But he must feed the crop, especially at the last working."

Another grower who uses this method is Lawrence Gravenor. He turns down annual rye grass and then runs up 7-foot rows. He then checks crosswise with a corn planter set at 3½ feet, and plants in checks. He cultivates the narrow way as long as possible to reduce hoeing costs, then he cultivates the wide way to keep the middles open. By this method he grows approximately 50 to 100% more marketable melons than the average. He plants over 1700 hills per acre.

Some growers have been concerned about the thick foliage which holds dew and moisture much longer in the day than melons planted with fewer hills per acre. However, over the past ten years none of the growers has reported any loss, either in production or quality of melons, from the thicker plantings. THE END.

ARTICHOKE COSTS

THE cost of growing artichokes is nearly double what it was before the war, according to a recent cost study in San Mateo County, California.

Before World War II the cost per acre for artichoke production in the county was $274.00 or $1.66 per 40-pound box. The present cost is $513.36 per acre or $2.20 per 22-pound box. This is a sample cost based on a yield of 4950 pounds per acre and a five-year producing life. It includes all costs except management.

For a complete summary of the study, "Artichokes—Costs Are Rising," write to R. H. Sciaroni, Farm Advisor, San Mateo County, 524 Main St., Half Moon Bay, Calif.

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TABLE GROWER

CALENDAR OF COMING MEETINGS AND EXHIBITS

June 13-15—Idaho Shippers Association (including Malheur County, Ore.) annual summer convention, Sun Valley.—Edd Moore, Sec'y, P. O. Box 1100, Idaho Falls.

June 24-27—Second annual Mushroom Industry Short Course, College of Agriculture, Pennsylvania State University.—Director of Short Courses, University Park.

June 27-29—Annual Watermelon Festival, Cordele, Ga.—Sam Roobin, Gen. Chairman, Cordele.

July 17—Southern Minnesota Vegetable Growers tour.—Juel B. Nelson, Sec'y, Albert Lea.

July 25-Aug. 2—National Vegetable Week, sponsored by Vegetable Growers Association of America. Joseph S. Shelly, Sec'y, 528 Mills Bldg., Washington 6, D. C.

Aug. 13-14—Ohio Pesticide Institute annual summer meeting, Ohio Agricultural Experiment Station, Wooster.—J. D. Wilson, Sec'y, Wooster.

Aug. 14-15—Pennsylvania Co-operative Potato Growers field days, Potato City.—Headquarters: 5235 Front Street, Harrisburg.

Aug. 16-Sept. 30—Vegetable Growers Association of America, third Grand Tour of Europe visiting England, Holland, Germany, Austria, Switzerland, Italy, and France. Tour conducted by Walter F. Pretzer, % American Express Company, 1425 Euclid Ave., Cleveland 15, Ohio.

Aug. 17—Summer Field Day, Kansas State College Horticultural farm, Manhattan.—William E. Amstein, Sec'y, Manhattan.

Aug. 26-28—United Fresh Fruit and Vegetable Association's ninth annual conference, Chase Hotel, St. Louis, Mo.—Association headquarters: 777 14th St., N.W., Washington, D. C.

Sept. 15-18—Produce Packaging Association 7th annual conference and exposition, Shoreham Hotel, Washington, D. C.

Sept. 16-18—Texas Citrus and Vegetable Growers and Shippers 15th annual convention, Statler-Hilton Hotel, Dallas.—Austin E. Anson, Exec. Mgr., 306 East Jackson, Harlingen.

Oct. 2-3—Second International Potato Harvester demonstration, of individual machines which both lift and deliver potatoes into bags or a vehicle or container, Honnington Grange, Lilleshall, Newport, Shropshire, England.—Potato Marketing Board, 50 Hans Crescent, Knightsbridge, London, S.W. 1, England.

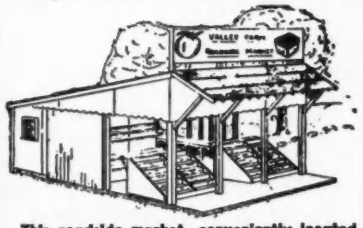
Oct. 9-11—Florida Fruit & Vegetable Association 14th annual convention, Hotel Fontainebleau, Miami Beach.—Florida Fruit & Vegetable Assoc., 4401 E. Colonial Drive, Orlando.

Nov. 14-15—Western Growers Association 32nd annual convention, Hotel del Coronado, Coronado, Calif. Headquarters; 606 So. Hill St., Los Angeles 14, Calif.

Dec. 9-12—Vegetable Growers Association of America 49th annual convention, Jung Hotel, New Orleans, La.—Joseph S. Shelly, Sec'y, 528 Mills Bldg., Washington 6, D. C.

Feb. 3-5, 1958—Ohio Vegetable and Potato Growers Association 43rd annual meeting, Neil House, Columbus.—E. C. Wittmeyer, Sec'y, Ohio State U., Columbus 10.

Easy-to-Build Roadside Stand



This roadside market, conveniently located so the motorist can readily stop, will make it easy for you to take care of customers quickly. Movable racks make it possible to maintain an attractive stand in accordance with supply and demand. Overhanging roof affords protection for the customer.

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Tomatoes.....2-5 tons Peas.....1-2½ tons

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Irrigating tomatoes with overhead sprinkler system. Later in the season water lines are dropped to near-ground level so that water can be sprayed under plants and upper leaves kept dry. Nozzles are spaced 3 feet apart.

WATERING TOMATOES

Irrigation must be carefully controlled for highest yields

By S. H. WITTWER
Michigan State University

THE phenomenal yield of 100 tons per acre of greenhouse-grown tomatoes has recently been recorded in Britain. In the United States production has seldom exceeded 60 tons. Heavy yields of fruit can be obtained only if growers provide the right amount of water at the right time and in the right way.

Growth Control

Moisture control is the best means of growth control, and control of growth is important for highest yields from the earliest seedling stages until the end of harvest. With plantings started in winter and early spring, potted plants are often placed on "basins" to restrict root growth. Flats with wire mesh bottoms are also used. They are moved periodically to disturb the roots and retard growth.

Until tomato plants are set permanently in ground beds, moisture control is not difficult because the roots are restricted. Once they are set in beds, however, the tomato grower faces a real challenge.

Tomato plants should be transplanted to ground beds with soil of medium moisture and spot-watered for a few days with a hose until established. During the following four to

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eight weeks of growth young plants should have ample room for root development into soil containing readily available water. No watering is needed during this time. In fact, some crops thrive without water for two months, and until two to three clusters of fruit have set. During this time plants should develop thick stems and leaves and large flower and fruit clusters.

With tomatoes grown as above, the first evidence of a need for water is a slight decrease in the thickness of the stem tips and a reduction in flower size. Growers should not wait until plants wilt.

Once regular watering is started, a continuous supply of moisture is best. Frequent light waterings are far better than a few heavy irrigations. Numerous tests have shown for spring crops of tomatoes that during fruit development and harvest 1½ inches of water should be applied weekly. The soil moisture should be kept near field capacity. This amounts to about 1½ pints of water per plant per day.

In this country most houses are equipped with a single irrigation line, with nozzles spaced 3 feet apart and suspended 6 to 7 feet above ground level. By rotating the line complete coverage over tall growing plants is possible. Late in the season the irrigation lines may be lowered to near-ground level. If the bottom leaves are trimmed off, water can then be sprayed under the plants and the upper leaves kept dry.

Trickle Irrigation

In England a new method of watering greenhouse plants has recently been developed. It consists of a permanent-type harness of small-diameter hose lines perforated at intervals or fitted with trickle nozzles.

Several growers in this country have tried trickle irrigation (distributed by the Cameron Company, 108 Runyon Ave., Deal, N. J.) with only fair success. Initial cost of installation is about $2500 per acre, and it lasts five to eight years. Originally a nozzle was provided for each plant, but results are equally good with one nozzle for two or even three plants.

The trickle irrigation system has merit. Soluble fertilizer can easily be applied in the water. Measured amounts of water may be applied every day or even more frequently by simply turning a tap on and off. The soil surface is not flooded, and the granulated structure of the soil is not destroyed. Widespread use of trickle irrigation is undoubtedly one of the factors contributing to high yields of greenhouse tomatoes in the British Isles. THE END.

THIS "Gem" model Howard Rotavator, powered by a Model AEN Wisconsin 4-cycle Single Cylinder Engine, will cultivate from 7,400 to 16,500 sq. ft. per hour, depending on ground travel in any one of three forward speeds . . . tilling to a maximum depth of 9 inches. This dependable and efficient piece of equipment is made by Howard Rotavator Co., Inc., Arlington Heights, Ill.

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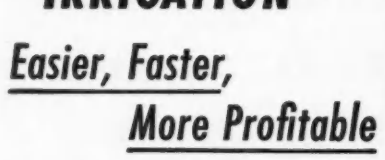

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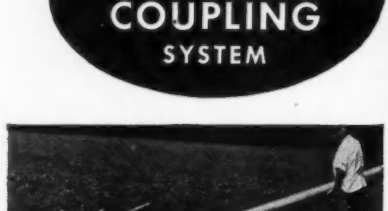

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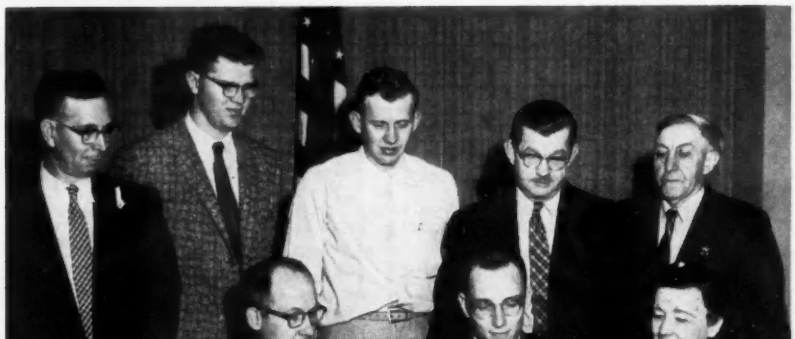
Boys' and Girls' Page



NJVGA Convention Planning Committee for 1957. Seated, left to right: Norman Oebker and Jack Armstrong, general chairmen; Miss Louise Murphy, manager, Convention and Visitors Council, Springfield Association of Commerce and Industry. Standing, left to right: C. A. Armstrong, chairman, tours committee; Errol D. Probasco, representing decorations committee; Merlyn Heyen, chairman, entertainment committee; Grant B. Snyder, convention director; William R. Laechelt.

Make *Your* Plans Now for 23rd NJVGA Convention

Over 500 boys and girls from 40 states will take part. Plan to be one of them!

GRANT SNYDER, national chairman of the National Junior Vegetable Growers Association, reports that the local committee is hard at work to make the 23rd annual convention this year at Springfield, Ill., another remarkable event.

Beginning on Sunday, December 8, for registration and get-together events, the program through Thursday, December 12, promises to be entertaining as well as educational. The first two days, according to NJVGA custom, are devoted to tours in and around the historic city of Springfield. Wednesday and Thursday are the days for the Demonstration, as well as Judging, Grading, and Identification contests, culminating in a gala banquet on Thursday evening when all awards in the various NJVGA contests are presented.

On Monday, the tour schedule so far calls for a visit to the plants of Pillsbury and Allis-Chalmers, with the latter as host for luncheon. After luncheon an Angus and a show horse farm as well as Lincoln Park will be covered. The evening will be devoted to movies and square dancing.

Tuesday will see the group touring a soybean plant at Decatur and the National Greenhouse Company, as well as other points of horticultural and industrial interest. Special entertainment will be staged that evening, with 4-H Club talent appearing on Wednesday evening.

It is expected that 500 boys and girls from about 40 states will be in attendance.

Film Premiere a Gala Event

Top officials from government, industry, and the educational field as well as individuals associated with NJVGA and National Canners Association recently enjoyed a world premiere performance of an outstanding motion picture in the Presidential Room of the Statler Hotel, Washington, D.C.

This production, in full color, produced by National Canners Association, has the simple title of "The Story of John Porter. John is now president of NJVGA. The film was developed specifically to encourage a wider acceptance of horticulture as a career for youth, using NJVGA as an example of training for the future.

A second film, in black and white, entitled "Your Own Row to Hoe," also produced by NCA, pictures the

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BLE GROWER

events of the 22nd annual NJVGA convention held last December in Atlanta, Ga. This will be valuable in encouraging a wider enrollment of boys and girls 13 to 22 in the NJVGA movement.

Both films can be booked without charge by writing to Prof. Grant B. Snyder, National Chairman, National Junior Vegetable Growers Association, French Hall, Amherst, Mass.

Time for Enrollment

With spring now well under way, state chairmen have received enrollment cards for the 18th Annual Production and Marketing Contest in the Fresh Market and Canning Crops section. Every year shows an increase in enrollments in this valuable youth training contest.

If you are between the ages of 14 and 21 and have completed at least one previous year of horticultural project work, you are eligible to participate. For further information please contact national headquarters: Prof. Grant B. Snyder, National Junior Vegetable Growers Association, French Hall, Amherst, Mass.

Outstanding Record

The very outstanding and capable director of the Northeastern Region of the NJVGA last year was our past president, **Nadine Thompson.** Nadine could qualify for the title of outstanding leader in many fields. As a student at Syracuse University, she has been active in the Home Economics Club, rush chairman of Delta Sorority, an officer in the Methodist student fellowship, and has served as secretary of the Collegiate 4-H Club and judiciary representative from her dorm.

Ex-prexy Thompson has attended every NJVGA convention since 1949. Since that year when she was state Production and Marketing contest winner and on the state demonstration team, she has steadily climbed the ladder to be regional, sectional, and national P & M winner. She was elected national secretary-treasurer in 1952, western director in 1953, vice-president in 1954, and became national president in 1955. A most outstanding record of achievement.

A bi-monthly page for the younger generation of vegetable growers and their national organization, the National Junior Vegetable Growers Association. For information write Grant B. Snyder, French Hall, University of Massachusetts, Amherst, Mass.

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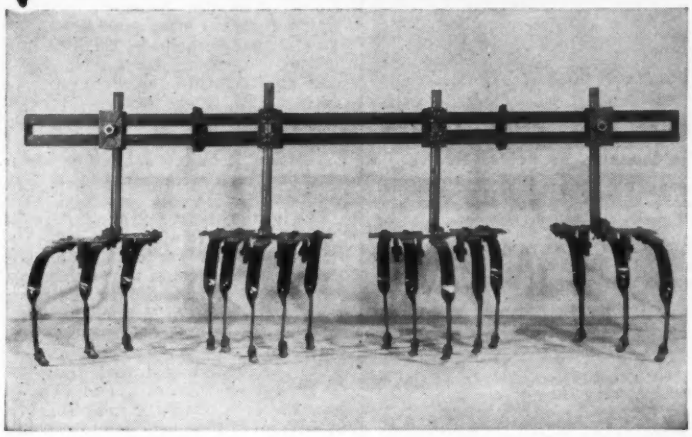

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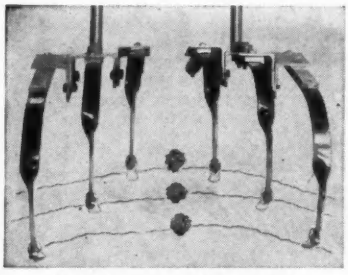

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- **HANDBOOK FOR VEGETABLE GROWERS.** By James E. Knott. 238 pages—$3.95.
Much of the widely scattered information on vegetable growing is packed into this spiral-bound, pocket-size handbook. Source of material is included. A "must" for your library.

- **THE TOMATO.** By Paul Work. 136 pages—$2.50
Here is a practical treatise on the tomato for the amateur as well as commercial grower. It includes discussions on characteristics; methods of planting, fertilization; cultivation; harvesting and marketing; and insects and diseases.

- **VEGETABLE GROWING.** By James S. Shoemaker. 515 pages—$6.00.
How, when and where you can profitably produce 40 different vegetables. Based on up-to-date findings, the book discusses time and depth of planting, harvesting, storage, and marketing. Much new material on hybrid seeds is included in this new second edition.

- **GREENHOUSES — THEIR CONSTRUCTION AND EQUIPMENT.** By W. J. Wright. 269 pages—$3.50.
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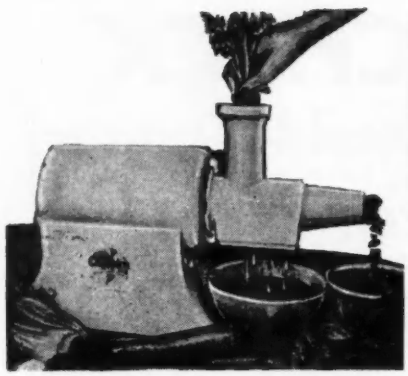

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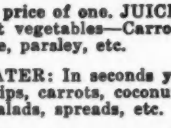

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With its spoon-type, one-piece arm, open spring and simple, efficient bearing, Rain Bird has achieved world-wide sprinkler irrigation success.

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STATE NEWS

(*Continued from page* 14)

for blight. Pointing out that a large portion of the Florida and Georgia crop has already been damaged from blight, Torrance said that Coffee County growers should have a favorable market if they can protect their crop from this disease.

B. B. Barfield, Florida City, Fla., buyer on the Tifton summer market, says that weather conditions and diseases have cut the tomato crop this year in Florida. He urged Georgia growers to produce a good quality product that will bring good prices, for the outlook has never been brighter for the Georgia crop.

At an irrigation short course held recently at Abraham Baldwin Agricultural College, Dr. W. T. Brightwell, assistant horticulturist at the Georgia Coastal Plain Experiment Station at Tifton, described irrigation tests with tomatoes and sweetpotatoes.

The horticulturist said the tests indicated that it is better to apply one inch of water every eight days (or enough to make up one inch in the event of rains) than to apply one-half inch every four days. Water applied too often causes tomatoes to crack, and too much water leaches out the fertilizer, he stated.

Dr. Brightwell said that tests showed the reverse situation satisfactory for sweetpotatoes. It is better, he said, to apply half an inch of water each four days than to apply one inch every eight days.

He emphasized that good cultivation practices must be followed if irrigation is to be effective.—*Mrs. Pauline T. Stephens.*

Cornell's Gain

NEW YORK—Dr. Roger F. Sandsted has recently joined the staff of the vegetable crops department at Cornell, coming from the University of Idaho. Dr. Sandsted's work will deal primarily with legume vegetables; research on cultural practices of dry beans, and extension work with dry beans, snap beans, peas, and lima beans. Approximately 200,000 acres of these crops for fresh market, canning, and freezing, are grown in New York.

A weed killing chemical, Simazin, has tested well as a weed controller in sweet corn and transplanted tomatoes. However, recent tests in New York also show that Simazin is highly stable and may cause serious residual problems. It is probable that cover crops could not be successfully planted the same season of treatment with Simazin, and crops (except corn) planted the following year may be injured. Growers are warned to proceed with caution until more information is available.—*P. A. Minges, Cornell U., Ithaca.*

Potatoes for Profit

SOUTH DAKOTA—The South Dakota Potato Growers Association at their 36th annual meeting in Watertown, elected W. J. Hartman, of Garden City, president; Howard Robb, Garden City, vice-president;

(*Continued on page* 34)

ORIGIN OF URBANA TOMATO

In the March tomato issue the Urbana tomato was listed as developed by Prof. Walter A. Huelsen of the Illinois Agricultural Experiment Station. Actually Urbana resulted from joint teamwork between Prof. Huelsen and the Cornell Seed Co.

The original crosses and selections of what later became the Urbana tomato were made at the University of Illinois by W. A. Huelsen and were sent to Cornell Seed Co. along with other tomato strains for trial. The variety appeared promising at Urbana in certain years. When Cornell Seed Co. tested under their conditions and selected from it, its true value appeared. It was very successful in the Southern Co-operative trials, and when it was entered by Cornell Seed Co. in the All-American trials in the name of the University of Illinois, it won an honorable mention. A certificate was issued to W. A. Huelsen and to Cornell Seed Co. Therefore, credit should be given to both as originators and sponsors of Urbana tomato.—Ed.

Know Your . . . VEGETABLE SEEDS

By VICTOR R. BOSWELL
U.S. Department of Agriculture

NEW ZEALAND SPINACH

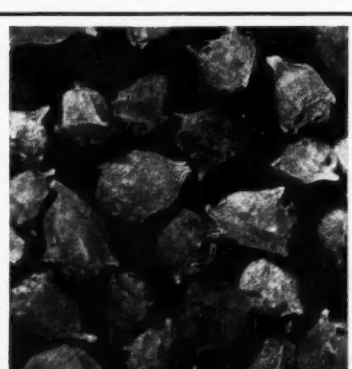
NEW ZEALAND spinach is not at all related to true spinach; it belongs to a distinctly different family. Its "seeds" as well as its plant characters in general are very different from those of true spinach.

The "seed" of New Zealand spinach is a hard, irregular, somewhat spiny, many-seeded fruit. A portion of the fruit stem can be seen at the base of most of the "seeds." When planted, the thick, hard, dry tissues of these fruits retard the absorption of moisture from the soil by the true seeds within. Germination is slow and erratic. For this reason, and since the plants grow large and should be widely spaced in the garden, many growers start the plants in a plant bed and transplant them to the garden.

New Zealand spinach is a very minor vegetable, of interest mainly to the home gardener and local market gardener. No accurate figures on annual production and value of seed are available.

Our small supplies of seed of this plant are produced in our western vegetable seed-growing districts; very limited amounts are also imported from Europe.

The plant matures its fruits over a period of weeks with the first fruits to mature located near the bases of the branches, and maturity progressing toward the tips. The plants are cut and dried in the field



at a time to obtain the maximum yield of mature fruits. Some fruits may drop to the ground and be lost before the harvested plants are piled on canvas sheets for curing, and some will be too immature to have value for planting. The fruits are generally recovered from the plants by flailing.

STATE NEWS
Special Report

VEGETABLE VARIETIES TESTED IN MINNESOTA

TO assist growers in selecting new varieties for their area, the University of Minnesota conducts trials throughout the state each year. Some of the promising vegetable varieties recently tested are listed below.

BEET

King Red (Northrup, King)
An excellent new strain of Detroit with smaller crowns and shorter, slender tops. The roots are extremely smooth and round. The interior color is uniformly dark red, lacking the often-found zoning of white or light-colored rings.

CABBAGE

Greenback (Ferry-Morse)
A new yellows-resistant variety maturing about a week later than Badger Market. Heads are medium-sized, very tight, and solid. The plants are larger and the heads have a remarkable fresh-looking green color. Excellent for local market and shipping.

Badger Market (Wisconsin Agr. Exp. Sta.)
A new early variety with resistance to yellows and tolerance of mosaic. It matures slightly later than Golden Acre, but the heads are small and solid. It appears to stand up well without bursting when fully headed.

LEAF LETTUCE

Tendergreen (Michigan Agr. Exp. Sta.)
A new variety possessing the dark green color and high tender quality of Bibb, but with larger and more upright plants like Grand Rapids. It is especially well suited for greenhouse production or early outdoor planting.

ONION

Abundance (USDA)
A high-yielding hybrid onion with large light-yellow bulbs of fairly mild flavor. It appears to be especially adapted to muck soils. It is not a long keeper, however.

Elite (USDA)
Another high-yielding hybrid onion with large uniform bulbs mildly pungent. It is an excellent storage onion for both muck and upland soils.

POTATO

Dazoc (Nebraska Exp. Sta.)
A new bright red variety maturing as early as Red Warba and producing good yields of shallow-eyed tubers. Culinary quality is good, but the variety shows no disease resistance.

Red LaSoda (Louisiana Agr. Exp. Sta.)
A medium early, high-yielding variety with intense red color. Tubers are smooth, with medium shallow eyes. It has no scab or blight resistance, but cooking and market quality are good.

SQUASH

Hybrid "R" (Farmers Seed)
A true F_1 hybrid squash with reddish orange turban-shaped fruits averaging 4 to 6 pounds. The flesh is thick, fine-grained, dry, and sweet. It is an excellent keeper. Its earliness, uniformity, productiveness, and excellent quality make it one of the outstanding hybrids for the commercial trade.

SWEET CORN

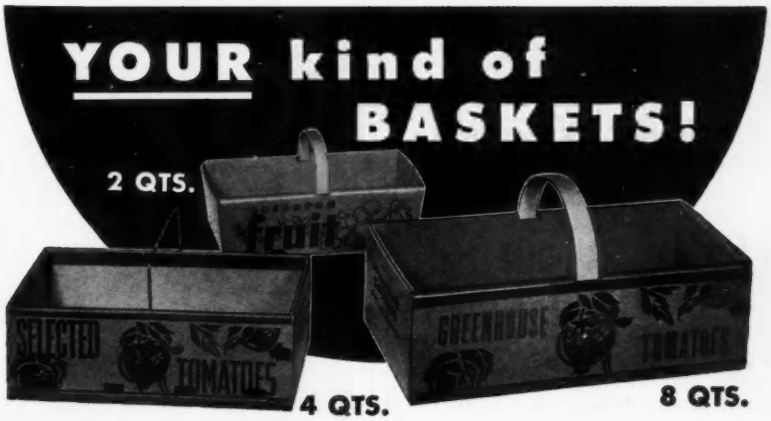
Morning Sun (Northrup, King)
An early-maturing hybrid producing well-filled ears of corn that remain in prime roasting ear stage longer than others. Both yield and quality have been good at most locations. It was not generally as early as Earliest Market King or Golden Beauty.

Sugar King (Northrup, King)
Another new variety maturing seven to 10 days later than Morning Sun. It has large ears and dark glossy green husks with long flags. Kernels are narrow and deep. Quality has been equal to or better than Seneca Chief.

TOMATO

Moreton Hybrid (Harris)
A new early hybrid that produces heavy clusters of medium to large tomatoes. Unlike many others, this hybrid continues to produce vigorous vines and good yields of fruit from early summer to fall.

Big Boy (Burpee)
Another F_1 hybrid that is one of the largest fruiting, with many tomatoes weighing over a pound. It is not as early as Moreton or others, but the heavy production of large high-quality fruits in midseason has made it an attractive item for the market garden trade.—*Orrin C. Turnquist, University of Minnesota.*



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AVG-6

The Cleveland Greenhouse Vegetable Growers—41 of them—decided to see what other growers were doing. Here they are shown as they arrived in Miami, Fla., on their tour of that area.

STATE NEWS

(*Continued from page 32*)

John Noonan, Watertown, secretary; and Ed Spevak, Watertown, treasurer.

Principal speaker at the meeting was A. E. Mercker, president of the National Potato Council, Mercker told the growers that housewives will pay as much as a dollar a pound for processed, packaged, and frozen potatoes, while growers in this area, aiming their production at the seed and fresh market, have been netting only a little over a dollar a hundred pounds. Processing of potatoes into products, thus offering more convenience to the housewife, may be the key to the potato grower's future profits, Mercker stated.—*Herbert F. Thom.*

Florida Tour

OHIO—The 9th annual tour taken by the Cleveland Greenhouse Vegetable Growers March 17-20 to Miami, Fla., was arranged by Harold S. Ward, Cuyahoga County agricultural agent, and a committee of growers headed by Vernon Kraushaar.

With the idea that they need to know other growers and what they are doing, the Clevelanders feel these tours provide them with the opportunity to do just that.

One day was spent in Dade County where visits by bus were made to the Cowan Hydroponic Farms; James Wutrich's Tomato Farm; Fred Jackson's hydroponic farm; Heller Brothers Packing House, and the B. and L. Farms that stretch as far as the eye can see.

The vastness of the B. and L. operation is the main reason that Dade County leads all others in tomato acreage. The farm employs 2600 laborers in the fields and has enough rolling equipment to resemble an army on the march.

The second day the group went north of Miami and toured the South Bay and Belle Glade region. This area, where man-made canals have reclaimed thousands of acres of black muckland, still has enough unclaimed land to grow sufficient vegetables to fill the nation's salad bowl for years to come.

The farms of George Wedgeworth and Louis Rauth were visited. Rauth is the grower who sparked the recent revival of the Florida vine-ripening tomato idea.

County Agents John Causey and M. W. Collier, Manager George M. Talbott, of the production and marketing division, Florida Fruit and Vegetable Association, and grower George Wedgworth accompanied the group in this area.

Tomato Hormone

CALIFORNIA—The new, much publicized chemical, gibberelic acid, will be tested this year in Merced County, reports Don A. Petersen, farm advisor. The hormone will be used to force the earliest tomato blossoms to set fruit and thus have mature early tomatoes at a time when the market is high. —*Neale Leslie.*

New Group

ILLINOIS—Officers of the newly organized Southern Illinois Vegetable and Small Fruit Growers Association are Ralph Griffith, president; Roy Schwartz, vice president; Glen Stadelbacker, secretary, Cobden. Cobden.

Disease-Resistant Tomato

TEXAS—Weshaven, a new tomato cross between the STEP 54 and the Southland, has been introduced by the Texas Agricultural Experiment Station. It is adapted to the south Texas area.

Marketing Trends

OREGON—R. H. Groder, extension marketing specialist at Oregon State College, in a recent interview said the amount of fruits and vegetables being unloaded in major West Coast produce markets may well be the key to expansion of the truck crop industry in Oregon.

Portland produce markets handled the equivalent of 11,000 carlots of fruits and vegetables in 1956, with California growers furnishing nearly 42% of this total, Oregon 22%, Washington 11%, and Florida 4%.

Groder urged Oregon growers to plan at once to satisfy this demand for vegetables as the growing population on the West Coast is increasing the demand for garden products.—*Harold and Lillie Larsen.*

Increased Acreage

KANSAS—There will be increased acreage of vine crops, tomatoes, and onions in the irrigated areas of western Kansas this year. A late spring hindered plantings of many crops and there was some loss from damping off as well as seed losses from early plantings of Irish potatoes.

Professors J. E. Greig and C. V. Hall, of the department of horticulture, have prepared a very useful bulletin for growers entitled "Growing Tomatoes in Kansas."—*W. G. Amstein, Sec'y, Manhattan.*

IMPROPER CULTIVATION

(*Continued from page* 12)

of sod crops in rotation along with cover crops over winter the vegetable grower can do much to reduce the sealing of the soil surface by raindrops. Of course, the ideal would be the use of a light mulch, but this is not practical for many growers where large areas are involved.

The extent or number of cultivations depends upon soil type, the crop being raised, and the frequency of rains or irrigations. Agronomists at the Ohio Agricultural Experiment Station compared the number of cultivations for field corn on light-colored (Miami) and dark-colored (Brookston) soils.

Their data indicate that on dark-colored soils with a high organic matter content it is desirable to cultivate only when required to control weeds. On the light-colored soils cultivating to a medium depth has some beneficial effects other than killing weeds. Such cultivation favors rapid penetration of water and also improves aeration of the rootbed. This would probably occur with many vegetables grown on similar soils.

The following classification is sometimes used to describe the rooting depths of various vegetables:

Shallow-rooted	Moderately Deep-rooted	Deep-rooted
Broccoli	Beans, Snap	Asparagus
Cabbage	Beet	Beans, Lima
Cauliflower	Carrot	Pumpkin
Sweet Corn	Cucumber	Sweetpotato
Lettuce	Eggplant	Tomato
Onion	Muskmelon	Watermelon
Potato	Pepper	
Spinach	Turnip	

Adapted from California Agr. Exp. Sta. Leaflet, "Suggestions of Irrigating Commercial Truck Crops," by L. D. Doneen and J. H. MacGillivray, 1948.

Nearly all vegetables have a large proportion of their roots in the top 8 to 10 inches of the soil. Some crops, such as onion, celery, lettuce, cabbage, potatoes, and spinach, have many more roots in the top 3 to 4 inches, and special attention must be given to these crops at cultivating time.

However, many of the vegetables with deeper root systems also have many of their important fibrous roots in the top 6 to 8 inches. Tomatoes, lima beans, and cucumbers are examples.

Adjust to Soil Type

The grower today has powerful tractors with hydraulic control over cultivators. It is easy to cultivate too deeply and damage too many of the roots in the top few inches of the soil. Sweeps and various types of knife-like cultivators will help to reduce such injury. Growers should also be alert to differences in soil types when moving equipment from field to field. The cultivator adjustment suitable in one field may not be suitable in a field with a different soil type.

Wesley Fields, veteran field man for Stokely-Van Camp, Inc., at Curtice, Ohio, urges his tomato growers to cultivate fairly deeply at first to loosen up the soil in case it has become packed after transplanting; then, on the second and third cultivations, to use sweeps and cultivate very shallowly. He says, "Growers can lose a ton or more of tomatoes very easily by cultivating too deeply during the latter part of the cultivating period."

MANUFACTURERS OF SPECIAL CULTIVATING EQUIPMENT

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Star Mfg. Co., Carpentersville, Ill.
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Following are some tips on cultivating specific vegetables:

Beans, snap and lima—Do not cultivate when wet. Bacterial diseases can be spread very easily with the cultivator. Cultivating too deeply can cause root injury, which in turn can cause blossom drop.

Cabbage, cauliflower, broccoli—Many of the roots are in the top 4 inches of soil and grow horizontally to a large degree. The roots will meet in the center of 30- to 36-inch rows by the time the cabbage is half-grown. Late, deep cultivation can do much damage.

Carrots—At the last cultivation throw some soil over the crown. This will help to prevent the formation of green color in marketable roots.

Celery—Leave the soil surface as level as possible after cultivating.

(*Continued on page* 36)

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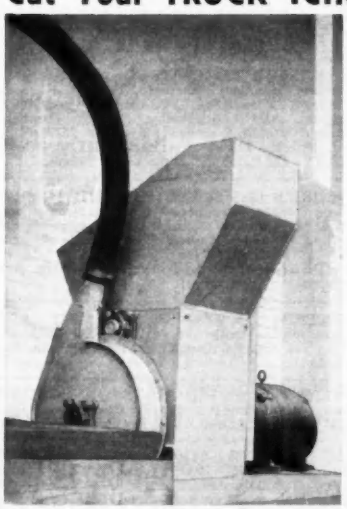

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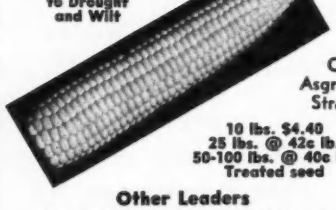

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CULTIVATION

(*Continued from page* 35)

Many roots grow close to the plant and very shallow.

Cucumbers, melons, squash—The root system is characterized by a strong tap-root which may extend 2 to 6 feet at maturity, depending upon the subsoil. The root system in the top 6 to 8 inches is very branching. Deep cultivation after vines begin to run can cause much damage.

Lettuce—This crop cannot compete with weeds, so frequent, shallow cultivations are necessary. The root system is very limited.

Onion—Growth is very slow at the beginning, and weeds can be troublesome at this stage. Commercial growers on muck soils in Ohio have been successful with chemical control of these early weeds. The root system is very shallow. Deep cultivation should be avoided.

Potatoes—Cultivation is frequently overdone. When plants are small to half-grown, a weeder will do an effective and economical job. If soil has been compacted during planting, early, deep cultivation may be needed. A weeder should be used during the middle of the day when plants are wilted. With some varieties, ridging to prevent greening of tubers is necessary. The time to throw the ridge will depend upon the season. In warm climates the ridge is made at the last cultivation.

Tomatoes—With direct-seeded plants the first cultivation should be very shallow so that seedlings are not loosened. A rotary hoe can be used. With transplants the first cultivation can be deep to loosen the soil in case it has become compacted during transplanting. Later cultivations should be shallow. THE END.

BOOK REVIEW

Compost—For Garden Plot or Thousand-Acre Farm, by F. H. Billington and Ben Easey. Fourth edition. 104 pages. $2.00. Charles T. Branford Co., publishers.

This practical little "how-to" book on composting by the late F. H. Billington has been revised and enlarged by Ben Easey, himself the author of a textbook on organic gardening.

A good book for the beginner-composter, it contains many facts and figures that will interest all growers. There is material on humus, soil population, and other information that will aid in the maximum production of crops.

Books on vegetable growing and allied subjects may be ordered through Readers' Service Department, AMERICAN VEGETABLE GROWER, Willoughby, Ohio. Enclose money order or check.

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Only 25c a word for one-time insertion; 20c a word for two-time insertion; 15c a word for four-time insertion—CASH WITH ORDER. Count each initial and whole number as one word. Copy must be in first of month preceding date of issue. ADDRESS AMERICAN VEGETABLE GROWER, Willoughby, Ohio.

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THE HOW-TO BOOK ON STRAWBERRIES. Packed with facts; simple and easy-to-follow professional tricks to improve your strawberry production. Illustrated. $1.50. AMERICAN VEGETABLE GROWER, Box 107, Willoughby, Ohio.

FOR ONLY 50c, WE WILL SEND COPY OF 1955 issue. Former price $2.00. Supply limited; maximum three to a reader. AMERICAN TOMATO YEARBOOK, Box 142-A, Westfield, New Jersey.

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$100.00 WEEKLY RAISING EARTHWORMS! Free plan reveals how! OAKHAVEN-25, Cedar Hill, Texas.

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USED SPRAYERS, JOHN BEAN MODEL 8 and Besler Blower, John Bean Self-Propelled Hi-Crop, Trescott and Bean Graders, Cider Presses, and crates. MARVIN FAETH, Fort Madison, Iowa.

ONE ALLIS CHALMERS MODEL G, 1953 with 5-row seeder and Ariens tillivator in very good condition—$1750.00 cash. One Felins electric tying machine in good condition—$75.00. One Felins tumbler washer (10 bushel capacity)—$50.00. ANGELO BERNACCHI & SONS, South Indiana Avenue, La Porte, Indiana.

UNITED STATES AIR CONDITIONER unit Model 24-10 for cold storages. Unit is like new and is priced reasonable. R. KUEHNE SONS, Seymour, Wisconsin.

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BURPEE'S BIG BOY F-1 HYBRID TOMATO. Strong plants. Produces enormous crops giant, round, smooth fruits. Live delivery guaranteed. 12-$1.40, 50-$5.00 Mossed, Postpaid. No shipments west Mississippi River. PETRIE'S PANSY GARDENS, 411 South Ravenel, Columbia, South Carolina.

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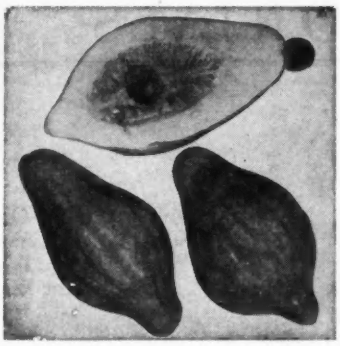


New Sugar Hubbard

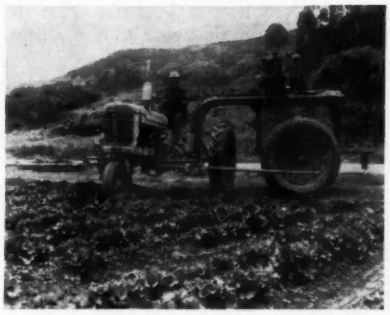
In Oregon a seed company which has led in the development of squash has introduced a new variety. I've seen and tasted it, and it's really worthwhile. The new variety, called Sugar Hubbard, has the fine grain and sweetness of a Sweet Meat plus the large size and shape of the old familiar Hubbard. The new variety keeps well, and you ought to grow some this year. The seed is inexpensive, 50 cents an ounce or $3.50 a pound. If you will write Ray Gill, Dept. VG, Gill Brothers Seed Co., Montavilla Station, Portland 16, Ore., you'll get your seeds or full details immediately.

Forward Control Jeep

The new FC-150 Jeep is built for rugged payload service both on the road and off the road over all types of terrain. The up-front location of the cab, in front of the engine, allows maximum usage of the Jeep's 81-inch wheelbase. The driver in the new cab has much better vision, and control of the Jeep is easier. All '57 Jeeps are powered with the famous Hurricane engine which has given growers unlimited service. Why not write Willys Motors, Inc., Toledo, Ohio, for all of the details.

Stop Row-end Trampling

"We've always wanted to harvest all of our crop, not trample a lot of it at field-ends," says a large produce grower in Watsonville, Calif. "The land in those mashed row-ends is just as valuable as if it were in the middle of the field. When you add those crushed row-ends into acres of lettuce, that makes quite a loss!"



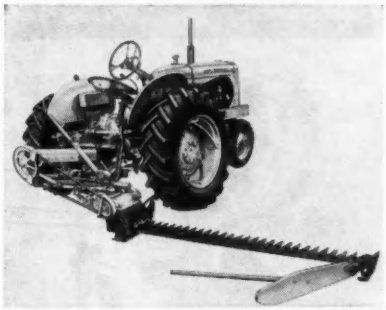
"This spring," the grower continues, "we heard John Bean made a new sprayer that would make quick turns. We bought one of the first ones and are using it. Of course, a lot depends on the driver, but we've been able to cut our row-end trampling by about 75%."

If you will write John Bean, Lansing 4, Mich., you will be mailed full details.

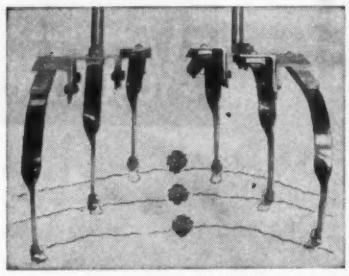
New for You

Twin-wheel Mower

Many growers have long wanted a mower which would eliminate vibration and excessive wear. The new twin-wheel design for the first time accomplishes this feat. The twin-wheel drive is mounted directly on the cutter bar which allows the sickle to operate at any angle from 90° to 45° below horizontal. This

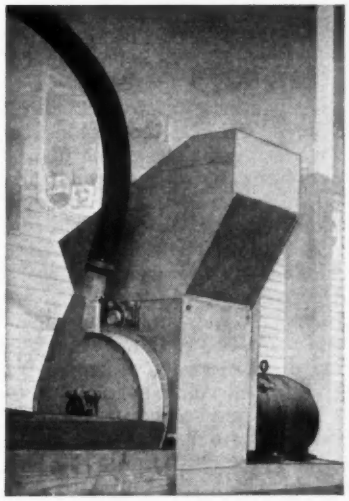


is a real improvement for the vegetable grower and you will want full particulars. Write Allis-Chalmers, Farm Equipment Division, Milwaukee 1, Wis. The new twin-wheel, trail-type model will fit any tractor.



Cultivate Right

Several large New Jersey growers wanted a cultivator designed to do a proper job. They searched high and low and were unable to find a cultivator which was engineered for the vegetable grower. Finally they interested a company in New Jersey in making the kind of cultivator we all need. The new equipment has done a perfect job—it throws no dirt and at the same time aerates the ground. Because of design, it leaves no ridges, mulches the ground deeply, and does the cultivating operation more quickly. It can be set easily and quickly, and it deserves your consideration. If you'll write Kirbro Company, 131 Schley St., Newark 12, N.J., they will send you full details.



Ice Cheaper and Faster

Icing vegetables has always been expensive, and many growers have resisted installing equipment to do the job. NOW all growers can own an ice crusher with a blower strong enough to blow ice 35 to 40 feet. The new unit, complete with a 7½ h.p. motor, 10-foot wire reinforced hose, and heavy-duty automatic reset control can be purchased at low cost. It will pay you to know more about this new equipment, and if you will write Index Coupon & Supply Co., 612 Indiana Ave., La Porte, Ind., a complete ice equipment catalog will be sent to you.

Chemical Trends

WE are always interested in trends and their effects on our vegetable growing business. We are especially interested in the trends of chemical usage, since we are among the heaviest users in agriculture.

In reviewing some recent USDA figures and chemical reports, we learn that by 1975 American farmers will be using 284% more fertilizer than they use today. Farmers have already pushed their fertilizer purchases from a 1939 value of $480 million to the 1954 value of $890 million. A sizable proportion of that figure comes from American vegetable growers.

On the other side of the chemical fence are the pesticide materials. We pour fertilizer into the soil to boost yields, only to find the healthy plants more tasty to insects and susceptible to disease epidemics. Hence we reach out for chemicals to control them.

Losses to farmers due to the major insects—about 8000 different species—run to almost $2 billion annually for all crops. Total estimated loss from all insects to livestock, forests, buildings, fabrics, households, and crops reaches the staggering figure of $3.6 billion. Control costs run to about $400 million per year for chemicals alone. It appears that the field of insect control is in for a long and steady increase in the use of chemicals.

Diseases extract a heavy toll from farmers' incomes and cause them to spend some $82 million each year to bring diseases under control. Heading the list in volume of sales is copper sulfate and second is sulfur, both of which have held their respective positions for a century. However, new chemicals, especially the carbamates, have greatly reduced the use of both copper sulfate and sulfur.

With the enormous increase in the use of chemicals in many forms on food crops, especially on vegetables, comes the inevitable question: What are chemicals doing to human health?

The evidence, contrary to some, points to the fact that our health is better today than ever. Some might say that it is better today in spite of the use of chemicals rather than because of them. This statement may be argued, but the fact remains that the average age of a human being is being lengthened each year, and fewer babies die each year, percentagewise. Chemicals must share in these accomplishments, both in the field of preventive medicine and in the field of better human nutrition.

We have little to fear from the use of highly poisonous chemicals in crop production, if labels are read carefully, and the user applies directions accordingly. We were happy to read recently that out of 20,000 farm accidents only 1.7% were due to chemicals, and that due to their misuse—labels were not read and followed.

Strike One!

WE'RE always duly impressed when we listen to the broadcast of a major league baseball game by the voluminous facts and figures the broadcaster has at his fingertips regarding each player, the number of hits, runs, errors made down through the years; how each team has functioned year after year. Having such records is of course the only way management can determine the worth of a player and his value to the team.

Applying that same line of thinking to the growing of vegetables, we have been wondering how many growers can pinpoint which crop has been doing well for him year after year, which cultural practice has been particularly worth while, whether the application of one inch of water every eight days is the right amount or whether one-half inch every four days would be preferable for his corn crop.

In other words, how often has he, the grower, struck out or made a particularly good hit.

Mulling this over in our minds and at the same time thumbing through the latest proceedings of the Ohio Vegetable and Potato Growers Association, we came upon what we think is a mighty fine suggestion for keeping a permanent record of "hits, runs, and errors" for the vegetable grower. Only Gilbert S. Watts, successful grower of Bellwood, Pa., likens his method of keeping his record to the work of a field commander who after defining aims and objectives, works out a detailed plan of battle in order to co-ordinate strategy, men, and materials into smooth, effective action.

"May I borrow your comb?"

QUOTE-OF-THE-MONTH

"Much energy has been spent in an effort to determine where the West begins . . . The West begins where the average annual rainfall drops below twenty inches. When you reach the line which marks that drop—for convenience, the one hundredth meridian—you have reached the West."

—Bernard de Voto

Watts starts out with a good, big map of his farm. If you don't have one, he suggests sketching your farm in pencil on engineer's tracing paper. "Make the map big, perhaps 16 x 24 inches, take it to a blueprinter in the nearest big town. He will make you a half dozen copies, blue lines on white, for a few dollars."

With these maps in front of him, Watts then writes in each field as it appears. Using a pencil he writes in soil tests, intended fertilization, planting date sequences, green manure plans, etc.

As the season progresses, the intentions in pencil are erased and actual applications and plantings, locations of varieties, and other details are entered in ink. "Advance of ink, retreat of pencil tells us at a glance how we are getting along—early, late, or on schedule." And the whole sheet tells at a glance, for example, just how he fertilized that fifth planting of sweet corn that isn't doing quite right.

Watts' record on maps goes back 34 years. He keeps them all in one drawer, the latest on top, and says they are invaluable for reference. The "hits, runs, errors" are plainly visible!

Coming Next Month

- Buyer's Guide for the Vegetable Farm
- Vegetable Areas of America—Maryland
- Ohio's Annual Greenhouse Day
- Let's All Celebrate National Vegetable Week
- How John Dollar Grows Asparagus

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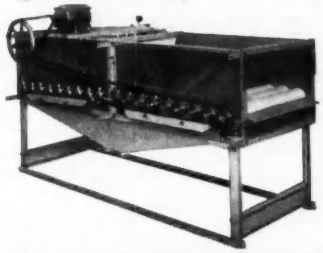

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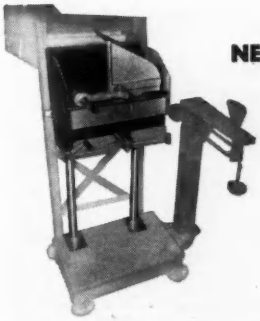

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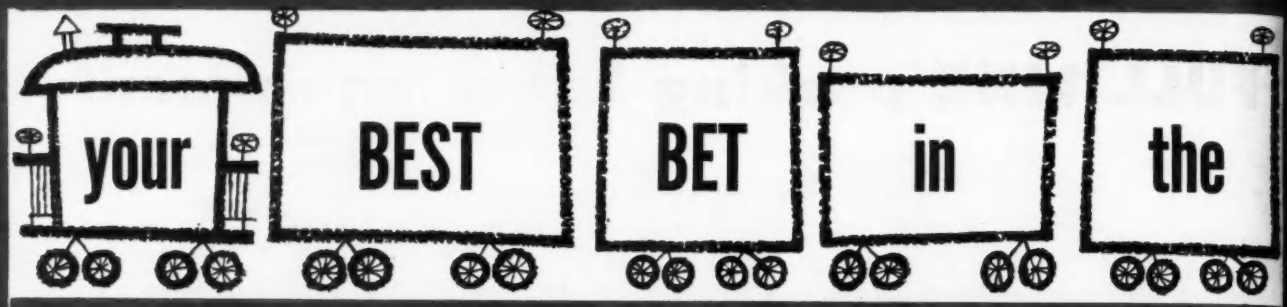

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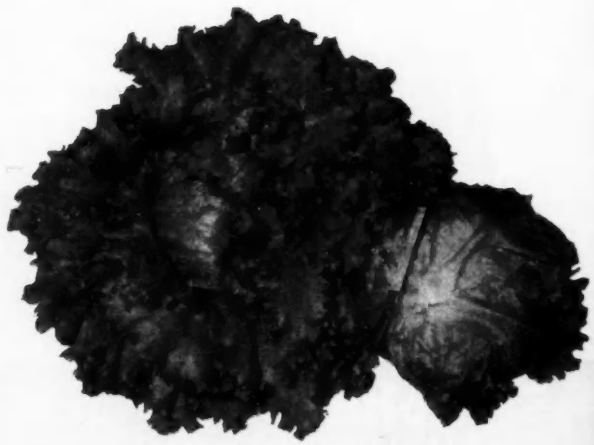

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